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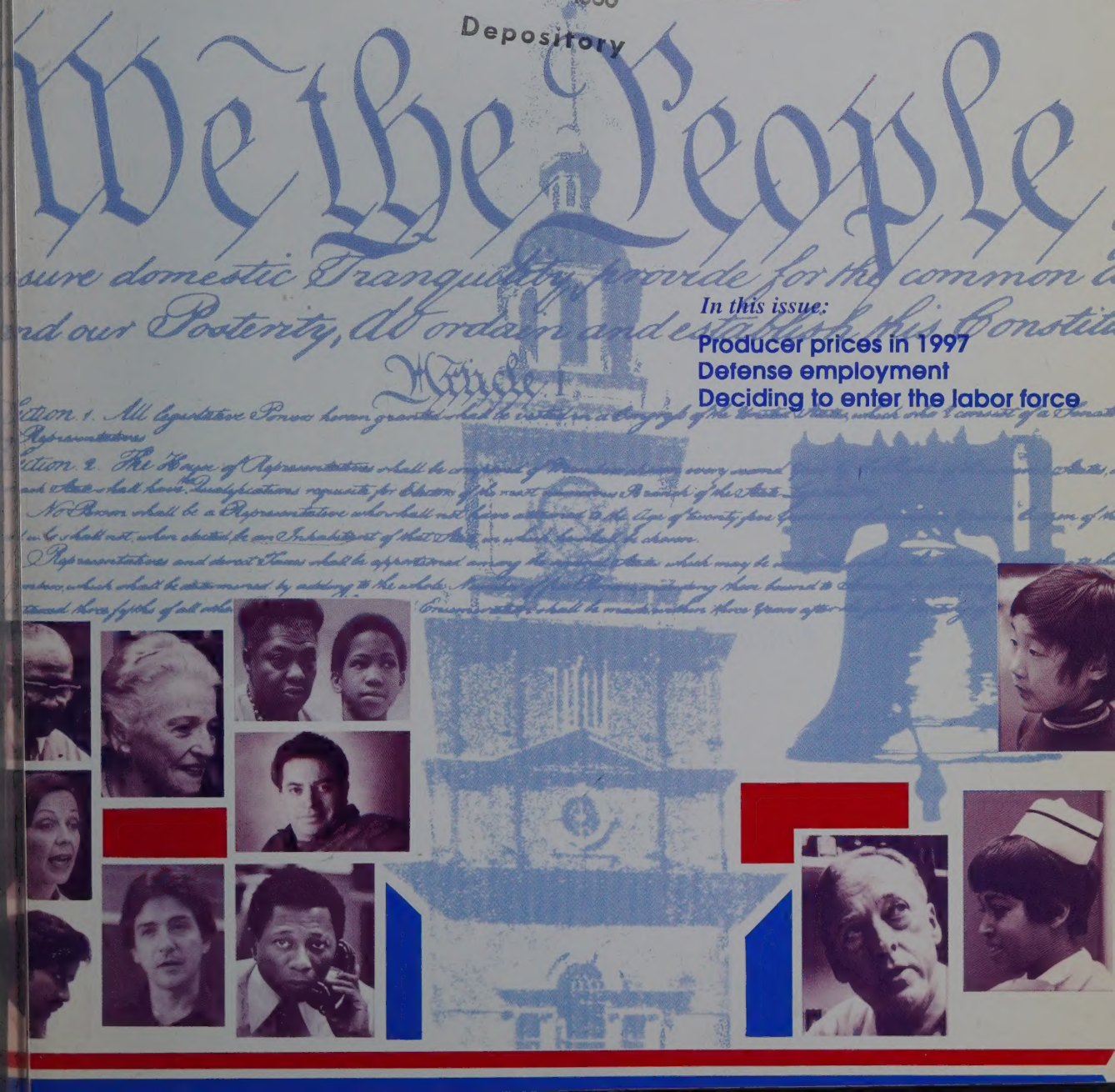
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sure domestic Tranquility, provide for the common
nd our Posterity, do ordain and establish this Constitu
Article I.

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Producer prices in 1997
Defense employment
Deciding to enter the labor force

U.S. Department of Labor
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Bureau of Labor Statistics
Katharine G. Abraham, Commissioner

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The July *Review*

The Producer Price Index for Finished Goods fell in 1997, the first decline on a calendar-year basis in 11 years, according William D. Thomas. Prices for food and energy drove the decline in the finished goods index; the index for finished goods other than those two broad categories was stable over the year. Goods at the intermediate and crude stages of processing fell by 0.8 and 11.7 percent, respectively. Again, the declines reflected changes in the prices of food and energy.

Allison Thomson extends a series of analyses of the employment impact of changes in defense-related spending. Her projections also extend the horizon for job losses in defense-related employment through 2006, albeit at a slowing rate. As Thomson notes, about three-quarters of the projected decline from 1987 to 2006 had been observed by 1996, the halfway point in the period.

Some of the most popular articles in the *Review* concern employment and unemployment. The article most frequently downloaded from our on-line archives recently, for example, has been the annual employment review from the February issue. Monica D. Castillo looks at a less visible aspect of the labor market—persons outside the labor force who want to work but, for one reason or another, are not currently seeking a job. This group accounted for almost 5 million persons in 1997, and thus represents human resources roughly equivalent in number to employment in wholesale trade.

Also in this issue: a briefing from John Murphy on the North American Industry Classification System (NAICS) that will shortly replace the 50-year-old Standard Industrial Classification and a much longer report on a recent conference on the potentials and challenges of creating linked employer-employee data sets.

Shiskin awards to two

Julius Shiskin Awards for 1998 were presented to Eva Jacobs, a former economist at the Bureau of Labor Statistics, and Joseph E. Gastwirth, a professor at George Washington University. Ms. Jacobs was honored for her leadership of the Consumer Expenditure Survey, her use of the survey's data to interpret economic conditions, and her responsiveness to customer needs. Professor Gastwirth was recognized for his clarification of the statistical properties of the Lorenz curve and other measures of income inequality.

The Julius Shiskin Award was established by the family of the late Commissioner of Labor Statistics. The award is to encourage innovative work in the field of economic statistics.

FLSA annual report released

Last month, the Labor Department released the 1998 report, *Minimum Wage and Overtime Hours Under the Fair Labor Standards Act.* According to the report, 65 percent of wage and salary workers were covered by the minimum wage provisions of the Act. Overtime provisions (time-and-a-half pay for hours over 40 per week) applied to 61 percent of wage and salary workers.

The majority of workers not covered by the provisions of the Fair Labor Standards Act were exempt due to their classification as executive, administrative, or professional employees. Smaller numbers were exempted as outside sales workers or were not subject to the Act.

Veterans in the labor market

Vietnam-era veterans who actually served in the Southeast Asia theater had higher unemployment rates than other veterans of the era or their nonveteran counterparts. Nearly half of the 8.2 million men who served on active duty in the U.S. Armed Forces from February 1961 to May 1975 reported service in Southeast Asia. Among such veterans aged 45 to 64, the unemployment rate was 4.0 percent, compared with 2.1 percent among other veterans and 2.6 percent for nonveterans.

As of September 1997, about half of the male veterans of the Vietnam era had participated in veterans' education and training programs. Of the specific programs veterans reported using, the GI Bill was by far the most frequently mentioned.

For more information, see news release USDL 98–258, "Employment Situation of Vietnam-Era Veterans."

Young workers try several jobs

Workers held an average of nearly nine jobs from ages 18 to 32, according to data from the National Longitudinal Survey of Youth (NLSY). About half of these job changes occurred before the age of 23. Among those younger workers, it was those who eventually obtained a college degree that usually held more jobs. This is thought to reflect the fact that college students may hold temporary jobs during the summer and part-time jobs during the school year. Among slightly older workers, the number of jobs did not vary much by educational level, as people tended to settle into more stable jobs.

Some of the movement among jobs could be associated with the search for higher earnings. Between the ages of 18 and 22, real hourly earnings (deflated using the research-oriented CPI-UX1) rose 7.4 percent per year. The earnings growth rate slowed to 5.5 percent a year while workers were 23 to 27 years old and eased to 2.6 percent annually from age 28 to 32.

For more information, see news release USDL 98–253, "Number of Jobs, Labor Market Experience, and Earnings Growth: Results from a Longitudinal Survey."

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Producer price highlights, 1997

Producer Price Indexes for finished goods, finished energy goods, and foods all fell during 1997, the first decline in 11 years for the finished-goods category; only the index for finished goods other than foods and energy remained stable throughout the year

William D. Thomas

Prices received by domestic producers of finished goods fell 1.2 percent in 1997, following a 2.8-percent rise in 1996 and a 2.3-percent advance in 1995. The last calendar-year decline for finished goods was in 1986, when the index dropped 2.3 percent due to falling energy prices. The index for finished energy goods moved down 6.4 percent from December 1996 to December 1997, after an increase of 11.7 percent a year earlier. Prices for foods, such as pork and fresh fruits and melons, fell 0.8 percent in 1997, following a 3.4-percent increase in 1996. However, prices for finished goods other than foods and energy, a category that includes consumer goods such as passenger cars and apparel, were unchanged in 1997, after a 0.6-percent rise in 1996. (See table 1.)

At the earlier stages of processing, the directions in price changes for intermediate goods were the same as those for crude goods. The index for intermediate goods declined 0.8 percent in 1997, after a 0.7-percent rise in 1996. This index measures the price movements of goods such as flour, steel, lumber, industrial chemicals, diesel fuel, and paper boxes. Prices for crude goods fell 11.3 percent in 1997 after rising 14.7 percent in 1996. Crude goods include wheat, scrap metals, logs, crude petroleum, and cotton. Prices for food-related materials at the intermediate stage of processing also fell from 1996 to 1997; at the crude level, price declines accelerated for foodstuffs and feedstuffs. However, when the effects of price changes for energy and food-related materials are excluded, the core indexes for both intermediate and crude goods turned up somewhat in 1997 after decreasing in 1996.

William D. Thomas is an economist in the Office of Prices and Living Conditions, Bureau of Labor Statistics. Joseph Kowal, an economist in the same office, assisted in the preparation of this article.

Economic background

The past year saw the Nation's economy turn in its best performance in a generation. Over the course of 1997, output growth and job creation remained vigorous, while inflation declined. Real (inflation-adjusted) gross domestic product grew 3.9 percent, and employment rose by 3.4 million, for an average rate of 284,000 jobs created per month. The unemployment rate dropped below 5 percent for the first time in 24 years, yet core inflation (as measured by the Consumer Price Index, excluding its volatile food and energy components) averaged only 2.2 percent, its lowest rate in more than 30 years. A principal force behind the current expansion has been private fixed investment. One benefit of this burst of investment has been a rapid expansion of industrial capacity.

Economic growth exceeded expectations in 1997, and the unemployment rate declined to a 24-year low. Households and firms increased their spending at robust rates as continued low inflation, low unemployment, declining costs of

business equipment, and lower long-term interest rates contributed to a favorable economic environment for both consumers and producers. Net exports continued to be a restraining influence on growth.

Strong investment in new productive capacity in the past few years has helped the economy accommodate higher spending without rising inflation. Chief among the factors that have combined to hold back inflation have been the rise in the value of the dollar on foreign exchange markets (which makes imports cheaper), unusually steep declines in prices for computers, and continued moderation in employer costs of health insurance.

Household income, consumer sentiment, and household net worth were all favorable in 1997: real disposable personal income grew over the four quarters of the year, and yearend stock market values were up about 30 percent from a year earlier. Outlays grew even faster than income, and as a result, the personal saving rate edged down.

Although consumption was robust over the past year, it was not smooth. Real consumption grew in excess of a 5-percent annual rate in the first and third quarters, but at only a modest yearly rate in the second. Most of the volatility was in goods consumption; services consumption grew at around a 4- to 5-percent annual rate in each quarter. Durable goods, which rose at double-digit annual rates in the first and third quarters, but fell at a 5-percent yearly rate in the second, accounted for much of the quarter-to-quarter fluctuations in growth. The roughly 15 million units of light motor vehicles sold in 1997 were about the same number sold in each of the previous 3 years; over this 4-year period, sales of light motor vehicles were just shy of the record 4-year pace set in the mid-1980s.

The signals for the traditional determinants of business investment were strongly favorable throughout 1997. Business equipment grew 12 percent over the four quarters of the year, with strong demand for most types of equipment. Industrial equipment grew a healthy 7 percent over the year, and transportation equipment advanced 10 percent, with particularly rapid growth in aircraft purchases.

The standout categories of business equipment investment in 1997 were office and computing equipment and telecommunications equipment. Growth in real computer spending was fueled in part by price declines that were even sharper than normal. One factor possibly boosting sales in this industry is the rapidly expanding capacity and availability of cellular telephone and other wireless services.

Investment in nonresidential structures was about flat in 1997, following solid gains in 1996. Construction of new office buildings made substantial gains, as the strength of the economy allowed the sector to grow out from under an overhang of empty office buildings at the beginning of the decade. These gains were offset by small declines in the construction of industrial, utility, and mining structures.

Table 1. Annual percent changes for major categories of the Producer Price Index, by stage of processing, 1993–97

Index	1993	1994	1995	1996	1997
Finished goods	0.2	1.7	2.3	2.8	–1.2
Foods	2.4	1.1	1.9	3.4	–.8
Energy	–4.1	3.5	1.1	11.7	–6.4
Other	.4	1.6	2.6	.6	.0
Intermediate materials, supplies, and components	1.0	4.4	3.3	.7	–.8
Foods and feeds	5.5	–4.5	10.3	2.1	–1.7
Energy	–4.2	2.9	1.1	11.2	–7.0
Other	1.6	5.2	3.2	–.9	.3
Crude materials for further processing	.1	–.5	5.5	14.7	–11.3
Foodstuffs and feedstuffs	7.2	–9.4	12.9	–1.0	–4.0
Energy	–12.3	–.1	3.7	51.2	–23.1
Other	10.7	17.3	–4.2	–5.5	.0

The demand for inventories was probably a result of strong final sales, which increased faster than inventories over the first three quarters of 1997. As a result, stocks remained lean in relation to sales.

Residential construction increased about 6 percent in 1997, with much of the growth occurring in the fourth quarter. The pickup toward the end of the year reflected in part the pattern of mortgage rates, which, after rising through April, fell more than 1 percentage point later in the year. Falling mortgage rates, together with strong real-income growth, resulted in an increase in the affordability of housing in the second half of the year. In addition to rising new-home construction, real-estate commissions moved up over the year, as sales of existing homes grew by 3 percent during 1997 as a whole, to their highest level ever.

The impact of the surge of private spending was muted, however, by an erosion in net exports, a continuing decline in real Federal Government spending, and slow growth in spending by State and local governments.

Short-term interest rates fluctuated within a narrow range over the course of the year, whereas long-term rates rose slightly early in the year, but then declined, finishing the year roughly 50 basis points (half a percentage point) lower. Long-term interest rates remained very low, largely reflecting both continued progress in reducing the deficit and market participants' expectations of low future inflation. (The former lowers nominal interest rates by reducing expected future real rates, while the latter acts directly to reduce nominal rates.) In addition, turmoil in foreign asset markets in the second half of the year helped make U.S. securities more attractive to investors.

On October 27, the Dow-Jones Index fell 554 points, the 12th-largest decline in its history, in percentage terms. The drop was steep enough to cause the New York Stock Exchange's system of "circuit breakers" to suspend trading tem-

porarily for the first time ever. The day after the plunge saw the volume of shares traded on the exchange reach a record high of 1.2 billion. (The market made up much of its previous day's decline that day.) The stock market rebounded quickly following its October losses. Nonetheless, turmoil in East Asia apparently continued to be a source of downward pressure on stock prices for the remainder of the year. The rise in stock prices in 1997 represents the continuation of a trend that has seen major indexes more than double over the past 3 years.

Inflation remained remarkably subdued in 1997. Core CPI inflation slowed over the course of the year, continuing a decline that began in 1995. Surprisingly, this deceleration in price increases occurred in an economic environment that was characterized by extremely low unemployment.

The pace of job creation was quite swift. Among the service-producing industries, growth was particularly rapid in computers and data processing and in engineering and management services. These hiring gains were matched by large increases in industrial capacity. Nevertheless, labor markets were tight and wages accelerated continuously during the year. Hourly wages, as measured by the employment cost index, rose by 3.9 percent in 1997, 0.5 percentage point faster than in 1996.

Growth in output per hour worked picked up in 1997: over the year, the official measure of productivity in the nonfarm business sector rose at an average annual rate of 1.7 percent.

Finished goods other than foods and energy

As mentioned earlier, the index for finished goods other than foods and energy—the "core" index—was unchanged in 1997, following a 0.6-percent advance in 1996. This slowdown in price increases was broadly based. The index for consumer goods other than foods and energy rose 0.3 percent in 1997, following a 0.8-percent increase in 1996. Prices for capital equipment turned down 0.6 percent in 1997 after rising 0.4 percent a year earlier. (See table 2.)

Table 2. **Annual percent changes in Producer Price Indexes for selected finished goods other than foods and energy, 1993–97**

Index	1993	1994	1995	1996	1997
Finished goods other than foods and energy	0.4	1.6	2.6	0.6	0.0
Consumer goods	–.2	1.6	2.3	3.6	–1.4
Passenger cars	3.3	2.1	1.7	–.8	–2.6
Light trucks	4.2	3.3	1.5	.2	–3.6
Prescription drugs	3.2	3.1	4.2	2.0	3.6
Over-the-counter drugs	2.7	1.7	1.7	–1.7	.3
Tobacco products	–21.4	.4	3.6	2.6	7.7
Books	.6	5.4	6.5	3.2	3.3
Periodicals	2.5	3.6	4.8	2.0	4.0
Newspapers	2.4	3.3	8.8	4.2	.1
Household furniture	3.7	2.7	2.7	1.4	1.1
Capital equipment	1.8	2.0	2.2	.4	–.6
Heavy trucks	3.1	3.0	4.1	–4.5	.6
Truck trailers	3.3	7.7	2.2	–1.4	2.0
Metal-cutting machine tools	.6	1.8	4.1	3.1	2.1
Metal-forming machine tools	1.6	3.5	2.2	2.6	3.2
Computers	–12.5	–6.8	–12.7	–22.3	–21.6
Agricultural machinery	2.9	2.7	4.7	1.4	1.4
Construction machinery	1.1	2.0	2.5	1.8	1.9

Among consumer goods other than foods and energy, indexes fell in 1997 after moving up in 1996 for sanitary papers, passenger cars, over-the-counter drugs, tires and tubes, cosmetics, and household appliances. Price increases slowed for light trucks, prescription drugs, newspapers, alcoholic beverages, periodicals, books, household furniture, tobacco products, mobile homes, sporting goods, soaps and detergents, girls' apparel, footwear, floor coverings, toys, and lawn and garden equipment. Prices continued to rise modestly for men's and boys' apparel. By contrast, the index for women's apparel rose after falling the previous year. Price increases accelerated for textile housefurnishings, costume jewelry, gold jewelry, and household glassware. Prices for home electronic equipment continued to move down.

The Producer Price Index for capital equipment fell 0.6 percent in 1997, following a 0.4-percent advance in 1996. Prices for light motor trucks turned down 3.6 percent after moving up 0.2 percent the year before. Price increases slowed markedly for civilian aircraft, commercial furniture, tools and dies, communications equipment, printing trades machinery, railroad equipment, ships, and metal-cutting machine tools. Prices increases also slowed, but only slightly, for construction machinery, industrial material-handling equipment, and agricultural machinery. By contrast, prices rose in 1997 after falling in 1996 for heavy motor trucks and for office and store machinery. Prices fell less than in the previous year for x-ray equipment, truck trailers, and transformers. Price increases accelerated for pumps and compressors, oil field machinery, textile machinery, and mining machinery. Prices continued to rise for metal-forming machine tools and paper industry machinery.

Transportation equipment. The index for motor vehicles declined significantly in 1997 as prices fell for both passenger cars and light trucks; however, prices for heavy trucks increased 0.6 percent. Prices for passenger cars decreased throughout 1997, partly a result of higher incentives offered by manufacturers to dealers to liquidate inventories. Prices also were held down by lower increases in the introduction of the new model-year cars and fewer interim price increases during the year. The market for domestic automobiles struggled all year and required higher incentives to keep it moving. In addition, sales of new automobiles in 1997 in the United States were dampened by large gains made by foreign manufacturers. Several foreign manufacturers even experienced double-digit gains in sales. Domestic manufacturers of automobiles also faced stiff competition from the light-truck segment,

which has grown immensely in market share in recent years. Domestic manufacturers continued to pare down product lines in 1997 by cutting down on duplication of models within the company (under different brand names), thereby giving each line a unique appearance. As in the recent past, motor vehicle manufacturers relied on the highly profitable light-truck segment to bolster their net profits. The market for light trucks has undergone numerous changes over the past few years. Consumers have come to expect the same incentives and discounts offered by automobile manufacturers. In addition, in 1997, competition heated up from foreign manufacturers who entered the light-truck market, offering luxury sports utility models. By yearend, much discussion and debate had taken place over emissions and fuel economy for the sports utility segment, whose vehicles generally have larger and more powerful engines than cars. The combination of marketing programs and a strong economy boosted the market for heavy trucks in 1997.

The index for aircraft and aircraft parts inched up slightly in 1997. Aircraft demand was fairly high; however, prices were held down due to competition. The aircraft parts industry also experienced growth over the year; however, lower costs for materials and fierce competition among manufacturers kept prices down. The index for ships increased 3.0 percent in 1997, reflecting increased production costs, especially for labor. The industry continued to be plagued by a shortage of highly skilled workers. The index for railroad equipment fell 1.5 percent in 1997, with prices for locomotive parts moving down as a result of burdensome inventories accumulated in late 1996 in anticipation of a boost in demand for these products that never materialized.

Paper products. Prices declined again in 1997 for a wide variety of paper goods, particularly sanitary household paper products. Prices for both tissue and towel stock were 6.4 percent lower than they had been in 1996. Declines for paper products reflected earlier decreases in prices for woodpulp and wastepaper. In 1997, two major producers of sanitary paper products merged and were able to take the lead in pricing.

Drugs and pharmaceuticals. Price increases for drugs and pharmaceuticals accelerated somewhat from 1996 to 1997. The index for prescription drugs rose 3.6 percent after increasing 2.0 percent the year before. Prices for over-the-counter drugs turned up 0.3 percent in 1997, following a 1.7-percent decline in the previous year. Price changes were not confined to any particular class of drug or buyer; small increases were registered for most categories of products. As in earlier years, health insurance providers, as well as managed care providers, used their purchasing power to induce pharmaceutical manufacturers to negotiate lower prices and limit increases. In contradistinction to prices for prescription drugs, prices for over-the-counter drugs behave more like those of other consumer finished goods: manufacturers compete directly for consumer dollars using coupons and other special promotions.

Computers. The index for electronic computers fell more than 20 percent for the second straight year. Prices declined sharply in 1997 for personal computers and workstations (30.7 percent), portable computers (35.1 percent), and midrange computers (25.4 percent). The multiplicity of different types of microprocessors and disk drives in the marketplace contributed greatly to these declines. The economic crisis in Asia also drove computer prices lower, by guaranteeing a flow of cheap components. As in other recent years, fierce price competition was prevalent throughout the industry.

Tobacco products and alcohol. Increases for tobacco products accelerated from 2.6 percent in 1996 to 7.7 percent in 1997. Most of the acceleration was due to the index for cigarettes, which advanced 10.0 percent in 1997, following an increase of 3.4 percent in 1996. In 1997, prices for cigars rose almost 6 percent, about the same as the year before. Cigarette manufacturers engaged in fierce competition for market share as the domestic market for cigarettes continued to shrink. As in recent times, the manufacturers expanded their presence abroad, with foreign markets having fewer age and advertising restrictions. Producers continued to increase exports through joint ventures abroad. By yearend, the possibility of multibillion-dollar settlements in class-action liability suits loomed over the cigarette-manufacturing industry. The previous year's upsurge in demand for cigars continued into 1997; in evidence of this trend were the proliferation of cigar manufacturers, more bars and restaurants catering to cigar smokers, and Web sites on the Internet devoted exclusively to cigar aficionados. The index for alcoholic beverages turned down 0.5 percent in 1997 after increasing 3.8 percent in 1996. In 1997, beermakers benefited from lower costs for grain and aluminum cans. Stiff competition among breweries for market share resulted in aggressive price discounting.

Energy

Following a rise of more than 50 percent in 1996, the index for crude energy materials fell 23.1 percent in 1997. Prices declined markedly for both natural gas and crude petroleum after advancing sharply in 1996. By contrast, the index for coal increased (4.9 percent) after decreasing (1.1 percent) the year before. (See table 3.)

Prices for intermediate energy goods dropped 7.0 percent in 1997, following an increase of 11.2 percent in 1996. After rising a year earlier, prices decreased in 1997 for liquefied petroleum gas, number 2 diesel fuel, jet fuels, and residual fuel. Price increases slowed markedly over the same period for utility, commercial, and industrial natural gas. By contrast, prices turned up after showing no change a year earlier for electric power. Price increases accelerated for natural gas sold to electric utilities.

The Producer Price Index for finished energy materials declined 6.4 percent in 1997, following an 11.7-percent rise in 1996. Gasoline prices fell 15 percent in 1997 after advancing 27.1 percent a year earlier. The index for home heating oil dropped 21.7 percent after advancing 25.0 percent in 1996. Price increases for residential gas slowed to 2.4 percent from 11.2 percent in the previous year. By contrast, the index for residential power fell in 1997 after increasing in 1996.

Foods and related products

Farm prices, as measured by the Producer Price Index for crude foodstuffs and feedstuffs, declined 4.0 percent in 1997, following a 1.0-percent drop in 1996. (See table 4.) After advancing substantially in 1996, prices moved down markedly in 1997 for slaughter hogs, slaughter broilers and fryers, wheat, fresh fruits and melons, and unprocessed finfish. Price increases slowed from 1996 to 1997 for alfalfa hay and unprocessed shellfish. Prices fell even more in 1997 than in the previous year for slaughter turkeys and raw cane sugar. By contrast, indexes rose after falling a year earlier for corn, slaughter cattle, fresh and dry vegetables, Irish potatoes for processing, soybeans, and vegetables (except potatoes). Price increases accelerated somewhat for fluid milk.

The index for intermediate foods and feeds fell 1.7 percent, following a 2.1-percent advance a year earlier. Prices dropped after increasing in 1996 for prepared animal feed, pork, confectionery materials, beef and veal, refined sugar, liquid milk products, and condensed and evaporated milk. Price increases slowed somewhat for fluid milk products and liquid beverage base. By contrast, prices increased in 1997, following declines in 1996, for crude vegetable oils and natural and processed cheese. Price increases accelerated for butter and dry mix preparations. Prices fell less in 1997 than they had fallen in the previous year for flour and dry milk products.

Prices received by domestic producers of finished consumer foods moved down 0.8 percent in 1997 after rising 3.4 percent in 1996. This reversal was led by a downturn in prices for pork, fresh fruits and melons, beef and veal, processed young chickens, processed fruits and vegetables, eggs for fresh use, soft drinks, and pasta. Price increases slowed for bakery products, confectionery end products, dairy products, and fish. By contrast, the index for fresh and dry vegetables turned up sharply in 1997 after a marked decline in 1996. Similarly, prices rose after falling a year earlier for roasted coffee, shortening and cooking oils, and milled rice. Price declines for processed turkeys slowed over the same period.

Table 3. **Annual percent changes in Producer Price Indexes for selected energy items, 1993–97**

Index	1993	1994	1995	1996	1997
Finished energy goods	–4.1	3.5	1.1	11.7	–6.4
Gasoline	–16.8	11.2	2.4	27.1	–15.0
Home heating oil	–10.1	6.9	11.9	25.0	–21.7
Residential electric power	.8	1.5	.9	.6	–.2
Residential natural gas	5.4	–2.6	–2.4	11.2	2.4
Intermediate energy goods	–4.2	2.9	1.1	11.2	–7.0
Residual fuels	–17.8	10.2	–4.7	32.8	–7.6
Natural gas to electric utilities	–13.0	3.4	–1.4	6.1	9.3
Diesel fuels	–15.9	5.9	11.1	26.2	–22.5
Jet fuels	–11.7	4.3	6.1	26.1	–22.3
Commercial power	3.2	2.3	.6	–.1	.0
Liquefied petroleum gas	–15.4	13.0	3.9	71.4	–29.3
Crude energy materials	–12.3	–.1	3.7	51.2	–23.1
Natural gas	–3.8	–14.0	–.3	92.0	–27.9
Crude petroleum	–27.7	21.1	10.8	35.8	–28.3
Coal	1.0	–2.1	–.8	–1.1	4.9

Grains and feeds. From December 1996 to December 1997, grain prices fell 2.0 percent, following a 20.3-percent drop over the previous 12 months. Contributing to the 1997 decline was lackluster growth in U.S. exports, due to large world crops and the Asian crisis. Wheat prices decreased 11.3 percent in 1997 after declining 19.3 percent in 1996, continuing the fall from their historically high levels reached in the summer of 1996. High wheat prices induced both domestic and foreign growers to plant more wheat. In addition, the U.S. Department of Agriculture's Conservation Reserve Program policy, which for years had eliminated millions of acres of wheat production, was replaced with a new policy in 1996 that gave growers much broader latitude in deciding which crops to plant. Corn prices rose 2.2 percent in 1997 after declining 21.0 percent in 1996. Like wheat prices, corn prices had reached historically high levels in the summer of 1996, causing more worldwide acreage to be planted. Generally favorable weather in growing areas resulted in record harvests.

Soybean prices increased 1.8 percent in 1997 after falling 3.7 percent in 1996. Adverse weather that delayed planting or ruined crops in many growing areas resulted in higher prices. During the summer, prices generally fell, as considerably more soybean acreage had been planted, leading to a worldwide glut in supplies. In the latter part of the year, high crop harvests were balanced by even higher domestic and foreign demand, and prices fluctuated somewhat as users replenished their stocks.

Slaughter livestock and meats. The year 1996 was very profitable for hog farmers; the bubble burst, however, in the third quarter of 1997. Export demand dropped due to a strong dollar after economic woes began to plague Asian markets and also partly because of Asian preference for Asian rather than North American varieties of pork. Together with increased pork production at home and cheaper chicken prices, the lackluster export demand pushed hog prices lower in 1997. Lower

prices for both barrows and gilts, as well as for slaughter sows, contributed to the aggregate decrease. Barrows and gilts are sources of the highly promoted lean pork products, and sows are the source for pork bellies and bacon.

The index for slaughter cattle turned up in 1997 after moving down in 1996. Drought resulted in sharply reduced grazing prospects, and higher hay prices forced cattle ranchers to cull herds sharply and retain fewer stocker cattle. Most of the impetus behind this reversal in the direction of price change came from the slaughter cows and bulls component. Slaughter cows and bulls are either excess animals culled from the dairy herd or excess mature breeding stock culled from the beef-type cattle herd. Prices dropped significantly in 1996 due to supply pressure as producers culled their herds of these types of animals. To some extent, culling of the herds continued on into early 1997, but prices did rebound from the 1996 level as the remaining stocks of the mature cattle herd began to enable ranchers to recoup the previous year's losses.

As with pork producers, producers of slaughter broilers and fryers had enjoyed positive returns a year earlier, despite feed costs. In 1997, production of such poultry began to outstrip demand, and at the same time, competing meats became cheaper. During the fourth quarter of 1997, producer prices for broilers plummeted as production increased.

Dairy products. Prices for dairy products rose almost 5 percent in 1997, about twice as much as they had risen in 1996. At yearend, fluid milk prices were higher due to seasonally higher prices during the colder winter months and an increase in demand from butter and cheese manufacturers. Skyrocketing demand for butter during the holiday season also helped to drive prices higher. Creamery butter prices increased 82.2 percent in 1997. Higher prices for fluid milk and butter caused prices for many manufactured dairy products, such as ice cream and cheese, to increase throughout much of the year.

Intermediate industrial materials

Prices for intermediate materials other than foods and energy increased 0.3 percent in 1997 after falling 0.9 percent in 1996. Prices for nondurable manufacturing materials moved up after declining the previous year. Prices for durable manufacturing materials were unchanged in 1997 after falling the year before. However, price increases slowed from 1996 to 1997 for construction materials.

Nondurable manufacturing materials. The index for nondurable manufacturing materials increased 0.3 percent in 1997, following a 3.3-percent decline in 1996. (See table 5.) Much of the 1997 reversal was due to an upturn in prices for paper and paperboard. Prices also rose after falling a year before for woodpulp, alkalies and chlorine, paint materials, and leather. Prices fell less than in the previous year for intermediate basic organic chemicals, phosphates, and synthetic rubber. Price increases accelerated for medicinal and botanical chemicals, inedible fats and oils, and gray fabrics. By contrast, prices turned down in 1997 after rising in 1996 for primary basic organic chemicals, plastic resins, nitrogenates, processed yarns and threads, and synthetic fibers.

Following 2 years of declines, prices for pulp and paper products turned up in 1997, as an improved economy and dwindling customer inventories gave rise to price hikes for most grades of paper. Woodpulp prices rose 4.1 percent in 1997, catapulted by sharp increases in the third quarter. Woodpulp prices moved down in the first 4 months of the year, only to rise when demand increased as customers rebuilt depleted inventories. Export demand to Asia—particularly, South Korea—dropped off significantly as a result of upheaval in financial markets in that country. Demand for woodpulp was dampened somewhat by the rapid rate of recovered paper consumption.

Paper prices increased 3.8 percent in 1997, following a 14.2-percent decline in 1996. After beginning 1997 with 3 straight months of price declines, the paper market rebounded, finishing the year with nine consecutive modest increases. The two driving forces behind this recovery were uncoated groundwood (up 24.5 percent) and newsprint (up 16.0 percent). Despite some pockets of discounting, especially in cut-size stock, prices for uncoated free-sheet were relatively stable at yearend. Mills were successful in holding transaction pric-

Table 4. Annual percent changes in Producer Price Indexes for selected food items, 1993–97

Index	1993	1994	1995	1996	1997
Finished consumer foods	2.4	1.1	1.9	3.4	–0.8
Pork	4.3	–11.1	15.3	21.9	–13.6
Dairy products	3.1	–2.0	5.4	2.4	4.7
Fresh fruits and melons	11.8	–11.2	2.5	37.2	–8.2
Fresh and dry vegetables	27.7	25.6	–36.0	–24.3	21.6
Roasted coffee	5.5	49.8	–8.2	–8.4	18.1
Beef and veal	–6.0	–4.8	–1.4	7.4	–5.4
Processed poultry	4.0	–3.7	8.4	2.6	–6.3
Intermediate foods and feeds	5.5	–4.5	10.3	2.1	–1.7
Prepared animal feeds	6.0	–10.6	20.6	5.4	–3.1
Crude vegetable oils	34.3	4.1	–14.1	–9.3	13.9
Flour	8.6	–1.1	20.1	–9.0	–8.2
Confectionery materials	10.4	2.2	1.5	2.2	–15.8
Refined sugar	–.6	.8	.8	4.2	–4.5
Crude foodstuffs and feedstuffs	7.2	–9.4	12.9	–1.0	–4.0
Slaughter hogs	–5.0	–21.3	40.6	23.2	–21.7
Soybeans	20.1	–18.1	26.7	–3.7	1.8
Wheat	18.6	–5.6	29.9	–19.3	–11.3
Corn	34.7	–22.4	49.4	–21.0	2.2
Fluid milk	6.7	–5.2	8.4	1.1	2.8
Slaughter cattle	–7.1	–5.3	–5.2	–2.5	2.0

ing in the last months of this year and did not have to resort to discounting. Overall U.S. demand growth for uncoated freesheet averaged slightly more than 5 percent for 1997, buoyed by a booming economy and increased sales of computers and printers. Future expansion of capacity was expected to come from productivity gains on existing papermaking machines. Newsprint consumption in 1997 by U.S. dailies outpaced the level of a year ago. At yearend, there was much concern about the effect on supply of the 5-month old work stoppage at a major Canadian newsprint mill. North American producers also were concerned about the dropoff in newsprint demand to Asia, which accounts for 42 percent of offshore exports.

As usual, price changes for paperboard mirrored those for paper. In 1997, paperboard prices rose 5.8 percent after falling 19.0 percent in 1996. All grades of paperboard showed increases in 1997, led by the unbleached linerboard category, which rose 8.0 percent. Paperboard capacity, which includes linerboard and corrugating medium made from virgin and recovered fiber, grew by 2.9 percent in 1997, compared with 5.8 percent in 1996. The increased capacity in 1996 and 1997 reflected the startup of seven new recycled linerboard machines and one recycled medium machine.

Prices for basic organic chemicals dropped 1.7 percent in 1997 after rising 3.6 percent in 1996. Primary basic organic chemicals, which are petrochemically derived and which include such products as ethylene, fell 3.9 percent in 1997. Earlier declines in prices for crude petroleum and gasoline, along with record imports, combined to increase inventories of primary basic organic chemicals and to lower prices. Demand for these chemicals was fairly strong in 1997 despite excess supplies. The domestic producing sector for such chemicals continues to grapple with lower prices due to expanded European production, a phenomenon that has greatly increased world supplies.

Construction materials. The Producer Price Index for construction materials increased 1.2 percent in 1997 after rising 1.8 percent in 1996. The slowdown in price increases was led by a downturn in prices for softwood lumber. Prices also turned down in 1997 after increasing in 1996 for air-conditioning and refrigeration. Price increases slowed for millwork, gypsum products, plumbing fixtures, heating equipment, cement, other metal products, metal valves, and switchgear. By contrast, price increases accelerated for fabricated structural metal products, wiring devices, and fabricated ferrous wire products. Prices declined, but less than a year earlier, for nonferrous wire and cable, plastic construction products, asphalt felts and coatings, and plywood. The index for steel wire advanced 1.3 percent, the same as its decline in 1996.

Softwood lumber prices fell in 1997. Prices fluctuated throughout the year in response to construction activity, weather, and demand. During 1997, railcar shortages and a slowdown in rail service hampered shipments from many wood products operations in western states. Several logistical problems resulted from the highly touted merger of the Union Pacific and Southern Pacific railroads. Prices also moved down in 1997 for softwood plywood. However, the year ended with much optimism by plywood producers, particularly manufacturers of treated plywood. Uses for such products increased substantially as demand expanded for applications such as home subflooring encased with fiberglass, roofing sheathing, flooring in portable buildings, and siding for beach homes. Prices increased again in 1997 for hardwood lumber, which is used mostly for furniture manufacturing; however, some is used for construction, particularly flooring. In 1997, prices also advanced somewhat for general millwork, such as cabinets, vanities, doorframes, and sashes. The market for millwork is one of the most stable for the various lumber products. Strong demand from the home improvement market helps to hold down price increases, even when there are swings in new-home construction.

Prices for gypsum products increased 7.1 percent in 1997 after rising 6.6 percent in 1996. Much of the increase was on the strength of robust activity in the home improvement sector. Most (uncalcined) gypsum is used to manufacture prefabricated products such as gypsum board. Price increases for insulation materials, such as building batts, accelerated in 1997 after rising modestly in 1996. Cement prices increased

Table 5. Annual percent changes in Producer Price Indexes for selected intermediate and crude materials other than foods and energy, 1993–97

Index	1993	1994	1995	1996	1997
Intermediate goods other than foods and energy	1.6	5.2	3.2	–0.9	0.3
Nondurable manufacturing materials	–.6	10.4	5.9	–3.3	.3
Inedible fats and oils	–6.1	48.0	–3.9	2.1	3.8
Woodpulp	–14.0	38.1	40.7	–33.0	4.1
Basic organic chemicals	–.7	15.7	.4	3.6	–1.7
Durable manufacturing materials	2.5	9.8	1.1	–1.4	.0
Copper	–19.7	68.2	–.1	–22.9	–22.8
Aluminum	–11.1	64.4	–7.3	–12.8	12.4
Lead	.0	37.5	9.1	4.2	–4.0
Zinc	–3.8	13.1	–5.7	–1.4	2.7
Construction materials	5.0	3.9	1.9	1.8	1.2
Gypsum products	12.8	30.8	1.0	6.6	7.1
Nonferrous wire and cable	–3.1	13.8	1.6	–3.1	–2.2
Softwood lumber	30.8	–9.6	–10.3	19.6	–3.8
Crude nonfood materials less energy	10.7	17.3	–4.2	–5.5	.0
Wastepaper	–12.3	179.6	–50.9	–1.3	11.6
Nonferrous scrap	–14.0	70.3	–10.3	–7.9	–.6
Raw cotton	12.9	34.9	4.2	–13.0	–11.2
Sand and gravel	3.1	2.2	3.6	1.9	1.8

3.5 percent, following a 5.0-percent rise the year before. Prices also advanced for concrete and concrete products, on the strength of increases for their chief ingredient, cement.

Durable manufacturing materials. In 1997, the index for durable manufacturing materials showed no change, following a 1.4-percent decline the year before. Prices rose after falling in 1996 for aluminum mill shapes, semifinished steel mill products, hot rolled bars, building paper and building board mill products, silver, zinc, and platinum. Prices fell, but less than in the previous year, for primary nonferrous metals, copper and brass mill shapes, cold finished bars, cold rolled sheets, flat glass, copper, and plywood. By contrast, prices turned down after rising the year before for hot rolled sheets and lead. Price increases slowed for prepared paint, cement, other metal products, and other miscellaneous metal. Prices for gold fell much more in 1997 than in 1996.

Copper prices declined 22.8 percent in 1997, about the same as in 1996. In 1997, prices declined steadily in the second half of the year. As in 1996, there was much concern that projected increases in capacity would have a dampening effect on prices. Warehouse stocks built up during the year, and supplies, coming to market from new mines, greatly exceeded demand. There were hopes in the marketplace that new demand from Japan or China would materialize. The index for copper last increased from May to June 1997, when London Metal Exchange warehouse stocks declined about 10 percent. Declines were restrained by threats of a work stoppage at Chilean mines and production snarls at a major domestic smelter.

The index for aluminum increased 12.4 percent in 1997 after falling 12.8 percent in 1996. Prices fluctuated throughout the year, nosediving in the fourth quarter. Consistent rises in London Metal Exchange inventories and periodic reports of increased production dampened prices for primary aluminum. Throughout the year, there were supply-demand imbalances that also helped to erode prices. Prices did rebound somewhat at yearend as producers worked down excessive inventories and warehouse inventories dropped at the metal exchange. Demand for primary aluminum was favorable in 1997; stock levels moved down consistently, almost without interruption. Prices were expected to respond more propitiously to what had been viewed as favorable market fundamentals. Although Southeast Asia is not a major consumer of primary aluminum, the region was blamed for some of the pricing predicament.

Domestic prices for gold fell 21.9 percent in 1997 as a robust stock market made the metal less attractive as an investment. However, prices for silver and platinum, which are both used in specialty manufacturing, increased in 1997 on the strength of steady demand.

Basic industrial materials

The Producer Price Index for basic industrial materials—crude nonfood materials other than energy—showed no change in 1997 after falling 5.5 percent in 1996. Prices turned up after falling the year before for iron and steel scrap, aluminum base scrap, wastepaper, pulpwood logs, and hardwood logs. Prices fell less in 1997 than in 1996 for copper base scrap, raw cotton, and phosphates. By contrast, price declines were steeper than in the previous year for gold ores, nonferrous metal ores, and softwood logs. The indexes for cattle hides and leaf tobacco both declined after advancing in 1996. Price increases slowed for other roundwood products. Sand and gravel prices rose 1.8 percent in 1997, only slightly less than they had risen the year before. (See table 5.)

Price movements for wastepaper, generally considered an early barometer of future manufacturing activity in the economy, were volatile in 1997. Wastepaper prices rose in the first quarter of the year, only to dip in the second quarter. Prices then advanced sharply in the third quarter and finally plummeted in the last quarter of the year. At its high marks, export prices rose 31.0 percent in May and 25.7 percent in August. Exports took a tumble in the latter part of the year, ending the fourth quarter 26.1 percent lower in price. At yearend, recovered-paper consumption continued to grow modestly; demand for old corrugated containers was steady to strong, with most mills using up all the product they bought. Demand for mixed papers was mostly in a holding pattern at the end of 1997, and paper stock dealers were optimistic that prices would strengthen in the near future. Demand for old newsprint dropped in the latter months of the year after showing improvement earlier in the fall. Demand softened, in particular, for standard newsprint, due to a steep drop in shipments to South Korea. By contrast, the strength of the Mexican market was a factor that bolstered prices of high-grade newsprint in the Southwest.

Prices for iron and steel scrap increased 14.5 percent in 1997, after falling 11.1 percent in 1996. Prices surged moderately at the start of 1997, lost some of that gain in March and April, and then steadily moved up for the rest of the year. Domestic steel mills operated at very high capacity, which bode well for scrap metal demand. Startups and ram-ups (restarts of idle plants) at various new scrap-fed minimills and the resumption of production at a major steel mill all supported demand. Export shipments were relatively low during 1997, not only largely because the domestic market was so vibrant, but also because the world market was a bit more sluggish than the U.S. market. High-grade scrap is now being purchased more on a contract basis, and this new phenomenon has led to more stable pricing than in years past. The year 1997 was also one in which the industry experienced considerable consolidation. This industry, once composed of

old family-owned businesses that usually operated three or four yards has evolved into one of giant publicly traded corporations. Scrap substitutes such as pig iron, iron carbide, and direct-reduced iron were increasingly available in 1997. A ready supply of pig iron from Russia and Brazil and the possibility of increased domestic pig iron output combined to keep prices in check. After falling in 1996, prices for aluminum base scrap increased 9.7 percent in 1997, as inventories of stock were drawn down and supplies became more balanced with demand.

Prices for raw cotton declined 11.2 percent in 1997, following a 13.0-percent decline the previous year. An excellent harvest kept supplies of cotton abundant in 1997. However, competition from foreign cotton farmers continued to be fierce, and U.S. farmers were still not able to be competitive with the lower foreign prices. In spite of this situation, certain grades of high-quality specialty cotton held their own. The index for leaf tobacco inched down 0.5 percent in 1997. With strong demand for exports of tobacco products, the outlook for increased tobacco production was optimistic. Prices for flue-cured leaf at auction were 11.3 cents per pound below those of the previous season. At yearend, during the first few weeks of the burley auctions, prices were slightly less than in the previous season. The 1997 flue-cured auction sales averaged $1.724 per pound, compared with $1.837 the year before.

Selected industries

Mining. The Producer Price Index for the net output of total mining industries declined 20.2 percent in 1997 after advancing 40.6 percent in 1996. Prices for the oil- and gas-extracting industry group decreased about 25 percent, following a 57.9-percent advance the year before. Prices for the metal-mining industry group fell 14.3 percent in 1997 after declining 12.7 percent in 1996. Prices increased 2 percent for nonmetallic minerals mining, the same as in 1996. However, the index for the coal-mining industry group rose 2.8 percent after moving down 0.7 percent the year before. (See table 6.)

Manufacturing. The Producer Price Index for the net output of the domestic manufacturing sector moved down 0.8 percent in 1997 after increasing 2.2 percent in 1996. Prices fell after rising a year earlier for the industry groups of food and kindred products, petroleum refining and related products, rubber and plastic products, and transportation equipment. Price increases slowed from 1996 to 1997 for textile mill products, apparel, lumber and wood products, furniture and fixtures, chemicals and allied products, and nonmetallic mineral products. Prices fell more in 1997 than in 1996 for electrical and electronic machinery. As in 1996, the index for nonelectrical machinery continued to fall. By contrast, prices increased after falling in the previous year for paper products and primary metal industries. Price increases accelerated for tobacco manufactures and fabricated metal products. The indexes for the industry groups of printing and publishing, leather and leather products, and measuring and controlling instruments, etc., continued to rise.

Table 6. Annual percent changes in Producer Price Indexes for the net output of major industry groups, 1993–97

Index	1993	1994	1995	1996	1997
Mining industries	–7.9	–1.0	2.9	40.6	–20.2
Metal mining	–6.8	35.5	6.2	–12.7	–14.3
Coal mining	–.1	–2.1	–.8	–.7	2.8
Oil and gas extraction	–10.7	–3.2	3.5	57.9	–24.6
Mining and quarrying of nonmettalic minerals, except fuels	1.0	1.4	2.9	2.2	2.2
Manufacturing industries	.8	2.4	3.0	2.2	–.8
Food and kindred products	2.2	–.3	4.0	3.2	–.9
Tobacco manufacturers	–21.7	.3	3.8	3.2	9.0
Textile mill products	–.1	.7	2.6	1.1	.5
Apparel and other finished products made from fabrics and similar materials	.5	.4	.8	2.0	.9
Lumber and wood products, except furniture	13.6	1.3	–2.6	3.0	1.3
Furniture and fixtures	2.9	3.0	3.0	1.9	1.1
Paper and allied products	–.9	10.7	13.1	–10.3	1.9
Printing, publishing, and allied industries	3.1	3.8	7.0	2.4	2.6
Chemicals and allied products	.1	7.4	6.0	1.5	.6
Petroleum refining and related products	–12.9	8.9	2.6	22.7	–14.5
Rubber and miscellaneous plastic products	1.0	3.6	2.6	.1	–.4
Leather and leather products	1.3	2.5	1.5	1.1	1.0
Stone, clay, glass, and concrete products	2.9	4.3	2.7	1.3	.9
Primary metal industries	1.6	9.3	3.2	–3.0	.7
Fabricated metal products, except machinery and transportation equipment	1.1	2.4	3.4	.6	1.2
Machinery, except electrical	.1	.9	1.4	–.6	–.6
Electrical and electronic machinery, equipment, and supplies	1.2	.3	.7	–.7	–1.7
Transportation equipment	3.0	2.4	2.1	.5	–1.0
Measuring and controlling instruments; photographic, medical, and optical goods; watches and clocks	1.2	1.2	1.5	.6	.5
Miscellaneous manufacturing industries	1.8	1.6	2.0	1.4	.6
Service industries:					
Railroad transportation	.9	.4	–.3	.0	1.0
Motor freight transportation and warehousing	–	2.7	1.7	2.4	2.1
U. S. postal service	.0	.0	10.4	.0	.0
Water transportation	–.9	2.5	2.4	.2	–.9
Transportation by air	8.2	–.3	7.4	5.9	.5
Pipelines, except natural gas	.6	10.2	3.4	–8.8	–2.2
Health services	–	–	3.5	1.7	1.0
Legal services	–	–	–	–	4.1

NOTE: Dash indicates data not available.

Services. The index for railroad line haul operations increased 1.0 percent in 1997 after showing no change in 1996. The modest price rise resulted from increased charges for some of the industry's lucrative commodities, such as coal, chemicals, and petroleum. 1997 was a mixed year for the railroad industry. Both passenger and freight operations experienced declining capacity and capability in meeting demand during the year. However, the two key measures of freight traffic—intermodal volume and total freight volume—both set records in 1997. Intermodal volume totaled 8.7 million trailers and containers, an increase of 6.8 percent over the previous year. Total freight volume reached nearly 1,375 billion ton-miles (shipment weight times travel distance), an increase of 0.9 percent from the 1996 figure. Overall, price movements for the index for line haul operations resulted from several factors: weather, the continued concentration of the rail freight industry, fuel prices, competitive market forces, and a robust economy. Inflationary pressures, such as rising fuel costs, the imposition of mandatory rail safety measures, and expanded services, were all held in check by increased operating efficiencies, wage concessions, increased productivity, industry restructuring, low interest rates, and competitive market forces.

From December 1996 to December 1997, the index for trucking (except local) rose 1.9 percent, following a 3.6-percent rise in 1996. During 1997, strong demand allowed the trucking industry to remain relatively stable, with steady, but small, price increases throughout the year. Less-than-truckload carriers, the category that showed the largest increase over the year, benefited from the rise in demand and posted profits during each of the four calendar quarters of 1997. Fuel prices remained stable at relatively low levels. Wages for drivers rose in response to driver shortages; however, carriers showed restraint and did not pass along all increased labor costs.

The index for air transportation moved up 0.5 percent in 1997 after advancing 5.9 percent the year before. In 1997, an increase in the index for scheduled air passenger transportation more than offset a decrease for scheduled air cargo transportation. Airlines were generally profitable in 1997, on the strength of a robust economy and high load factors (the percentages of seats filled on a plane). The elimination of the Federal excise tax on January 1 caused the index for scheduled air transportation to rise in the first quarter. The increase occurred because the airlines failed to pass on this tax savings to consumers. Since the Producer Price Index captures price changes excluding taxes, eliminating the tax resulted in an increase in the index when the airlines failed to lower ticket prices. After the airlines experienced strong profits and 2 months of a tax-free windfall, the 10-percent Federal excise tax was reinstated on March 7; the airlines passed along only a portion of the tax to consumers, thereby causing the index to decline for March. The Federal excise ticket tax was restructured again on October 1. The new tax became 9 percent, with the addition of a fee of $1 per segment. (A segment begins with a takeoff and ends with a landing.) The year also was characterized by labor unrest, particularly from pilots, and airlines were faced with making concessions to avoid shutdowns.

The index for airports, flying fields, and airport services rose 4.2 percent in 1997, following a 5.3-percent increase in 1996. Leased space for concessions moved up 13.7 percent over the year. This index is subject to large swings; leases for concessions are often based on a percentage of gross revenue and are highly indicative of passenger traffic and the spending habits of passengers. As in 1996, airport managers chose to raise prices for services rendered to air passenger and air cargo carriers during 1997 in order to fund airport improvements. The index for other commercial airport services decreased 2.6 percent in 1997; unlike other operations, the aviation side of the airport is not expected to generate a profit. Airports used passenger facility charges, as well as airline ticket taxes, to help fund costly improvements.

Although the index for commissions for airline arrangements declined 4.7 percent in 1997, a 19.0-percent advance in the index for nonairline arrangements caused the overall index for travel agencies to rise 0.9 percent from December 1996 to December 1997. The system of capping commissions to travel agencies has greatly restricted compensation to agents since 1995. Among nonairline arrangements, bookings for cruises showed the largest increase (35 percent).

The radio broadcasting index moved up 4.9 percent in 1997 after increasing 8.7 percent in 1996. The higher rise in 1996 resulted from two stellar events: the summer Olympics in Atlanta and the presidential election in November. The increased demand associated with these events permitted radio broadcasters to raise their rates more quickly than usual; previously, these companies could increase their rates only in response to changes in programming costs. In addition, the Telecommunications Act of 1996 ignited a merger frenzy within the industry. The consolidation of radio-broadcasting stations allowed broadcasters to pass along higher rates to advertisers at all levels. Radio broadcasters benefited from three market advantages. First was the greater ease of purchasing advertising, compared with the other media. Second, there arose a greater awareness of radio's cost-effectiveness. Finally, the medium benefited from a greater awareness of its ability to target key demographic groups.

From 1996 to 1997, the index for cable and other pay television services rose 4.3 percent. This hike resulted primarily from rising cable rates, reflected in a 4.1-percent increase in the price of subscriber services. In addition, charges for advertising services increased 8.2 percent, and charges for network affiliate services advanced 2.7 percent. Throughout 1997, there was much concern across the country over rapidly rising cable rates. Many consumer groups complained

that rates were rising at the fastest pace ever, with some even increasing at twice the rate of inflation in the overall economy. As the year drew to a close, these same groups demanded that the Federal Communications Commission put a freeze on cable rates.

From December 1996 to December 1997, the index for operators and lessors of nonresidential buildings increased 1.9 percent, compared with a decrease of 0.9 percent a year earlier. The index for operators and lessors of office property rose 2.9 percent in 1997, mostly due to the lack of new office property development, which palls in the 1990s in comparison to the excess buildup in the 1980s. In the 1990s, nationwide vacancies were in the 8- to 10-percent range. The index for operators and lessors of retail property rose 1.3 percent in 1997, and the index for operators and lessors of industrial property increased 0.9 percent.

The hotel and motel index advanced 4.2 percent from December 1996 to December 1997, compared with an increase of 4.5 percent over the previous 12 months. In 1997, charges for guest room rentals moved up 5.7 percent; prices for food and beverages rose 2.9 percent; rates for other guest room rentals, including casino hotels, increased 11.4 percent; and the index for limited-service hotels and motels advanced 7.8 percent. The industry as a whole experienced a year of high occupancy rates as a result of a booming economy, with robust demand from both the business travel and leisure travel sectors.

As in 1996, revenues for help supply services were robust in 1997. The index for the industry increased 1.7 percent in 1997. The unemployment rate was relatively low for most of the year, and fierce competition among agencies prevented charges from rising higher.

The index for passenger car rentals, without drivers, advanced 15.0 percent in 1997 after falling 9.3 percent in 1996. The 1997 increase was largely the result of a 17.3-percent rise in the index for passenger car rental, except replacement. During 1997, the passenger car rental industry was plagued with legislative proposals to increase taxes at both the State and local level, ongoing class-action discrimination suits, industry restructuring, and increased competition for market share.

Price increases for health care services slowed from 1.7 percent in 1996 to 1.0 percent in 1997. The index for general medical and surgical hospitals mirrored this slowdown; however, the index for offices and clinics of doctors rose somewhat more in 1997 than in 1996. Prices for home health care services moved up 7.9 percent in 1997, with charges for home health aides increasing the most of all types of payors. In 1997, pressures by managed care companies on the health care industry continued to help lower prices and keep inflation at a minimum. There was a growing trend of physicians consolidating into larger organizations. Doctors increasingly had to compete for managed care dollars in this new environment by creating their own networks, which enhanced their bargaining power. Physician networks bring together partners with management skills, managed care expertise, information systems, and capital. With the increasing presence of health maintenance organizations in the health care industry, physicians have continually moved away from traditional fee-for-service arrangements into capitation arrangements, or fixed periodic prepayments per member. While the Producer Price Index does not capture changes in capitation rates, this type of payment is becoming increasingly popular and contributes to the reasons physicians experienced smaller increases in revenue.

The newly introduced index for legal services increased 4.1 percent in 1997. This index was rather stable throughout the year, except in January, when most law firms make changes in their fee schedules that become effective with the new calendar year. Also introduced in 1997 were indexes for engineering and architectural services. The index for engineering design, analysis, and consulting services moved up 3.2 percent in 1997; the index for architectural design, analysis, and consulting services increased 3.0 percent from December 1996 to December 1997.

The index for accounting, auditing, and bookkeeping services increased 2.3 percent in 1997, reflecting semiannual adjustments in January and July to such firms' billing rates and pricing strategies. In addition to being affected by a strong economy, 1997 prices changed because the proposed mergers of the big six accounting firms in the industry resulted in intense competition among these top firms, which were willing to grant deep discounts to clients in order to land big accounts. □

Defense-related employment and spending, 1996–2006

While the post-Cold War contractions in defense spending and employment are easing, reductions in defense spending will continue to affect employment across all industries and occupations through 2006

Allison Thomson

Following the end of World War II, the Cold War and its accompanying arms race provided the U.S. economy with a period of relatively constant defense spending and defense-related employment growth. Real defense spending retrenched slightly in the years following the Vietnam War to a low of $266.4 billion in 1977, accounting for 6.2 percent of gross domestic product (GDP).[1] Despite the negotiations and subsequent arms limitation treaties during the 1970s and 1980s, tensions remained between the Soviet Union and its sphere of influence and the United States and its NATO allies. Under the philosophy that the best deterrent against aggression is a strong defense, the U.S. Government quickly escalated defense spending in the 1980s. By 1987, U.S. defense spending reached a post-Vietnam War high of $409.2 billion, or 7.2 percent of GDP. In 1988, the Cold War ended as the winds of change felled the Berlin Wall. With renewed hopes for world peace, nearly 7 million people, roughly 6 percent of the U.S. labor force, whose jobs were tied to defense spending, were suddenly faced with a future of uncertainty.[2]

The 1987–96 period was marked by severe cuts in defense-related spending and employment. These reductions were felt across most industries and occupations in the economy. Real defense spending fell by $94.3 billion to 4.6 percent of GDP, and defense-related employment in the United States retracted by 2.5 million to 3.4 percent of the labor force.[3] In 1996, defense-related employment was responsible for 255,000 fewer jobs than the previous post-Vietnam War low in 1977. Of the decline in employment, 42 percent, or 1 million jobs, was in Government—including the Armed Forces, and civilians in the Department of Defense and nondefense agencies. The remainder of the decline in employment (1.5 million jobs) occurred among workers in the private sector. The greatest reductions in the private sector occurred in direct defense-related employment. A significant proportion of the decline in the private sector, 42.5 percent, or 605,000 jobs from 1987–96, is attributed to indirect defense-related employment. These reductions in defense-related spending and employment left few areas of the labor market untouched.

The drastic reductions in defense spending and related employment are beginning to show signs of slowing. BLS projects that defense-related employment will recede from 4.5 million jobs in 1996 to 3.7 million by 2002 and to 3.6 million by 2006. (See table 1.) These estimates are based on projected reductions in real defense purchases of goods and services from $314.9 billion in 1996 to $265.4 billion in 2002, and to $257.3 billion, or 3.0 percent of GDP, by 2006.[4] The rate at which real defense spending is projected to decline between 1996 through 2006 is significantly slower

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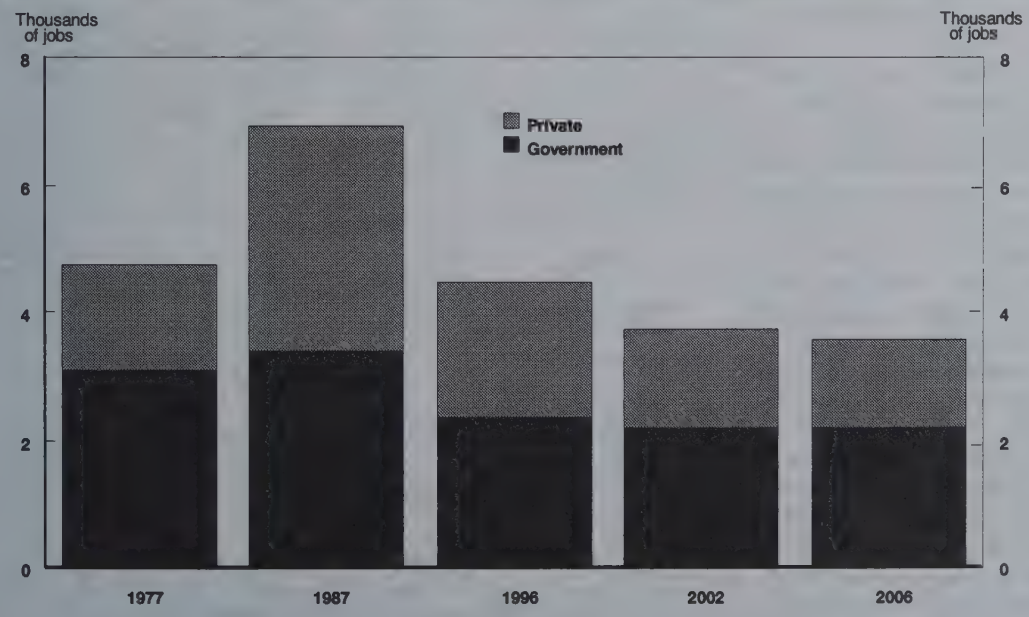
Table 1. Defense purchases and employment in relation to the entire economy, 1977, 1987, 1996, and projected 2002 and 2006

Item	1977	1987	1996	2002	2006	1977–1987	1987–1996	1996–2002	1996–2006	1987–2006
Billions of chain-weighted 1992 dollars										
Gross domestic product	$4,279.3	$5,648.4	$6,911.0	$7,739.9	$8,539.1	$1,369.1	$1,262.6	$828.9	$1,628.1	$2,890.7
Defense purchases	266.4	409.2	314.9	265.4	257.3	142.8	–94.3	–49.5	–57.6	–151.9
Compensation	137.8	155.1	115.9	106.4	106.4	17.3	–39.2	–9.5	–9.5	–48.7
Other defense	128.6	254.1	199.0	159.0	150.9	125.5	–55.1	–40.0	–48.1	–103.
As a percent of GDP										
Defense purchases	6.2	7.2	4.6	3.4	3.0	1.0	–2.7	–1.1	–1.5	–4.2
Compensation	3.2	2.7	1.7	1.4	1.2	–.5	–1.1	–.3	–.4	–1.5
Other defense	3.0	4.5	2.9	2.1	1.8	1.5	–1.6	–.8	–1.1	–2.7
Thousands of persons										
Total employment [1]	95,588	116,523	133,884	144,646	152,370	20,935.3	17,361.4	10,761.6	18,485.3	35,846.7
Defense related	4,767	6,942	4,492	3,744	3,595	2,174.9	–2,450.4	–747.8	–896.9	–3,347.3
Civilian, Defense Department	1,021	1,122	814	741	741	101.8	–308.3	–73.0	–73.0	–381.3
Civilian, other Government	24	41	23	17	15	17.8	–18.5	–5.9	–7.8	–26.3
Armed Forces	2,071	2,235	1,532	1,443	1,443	163.5	–702.5	–89.2	–89.2	–791.7
Private	1,652	3,544	2,123	1,543	1,396	1,891.8	–1,421.1	–579.7	–726.9	–2,148.0
Directly related	930	1,997	1,180	889	822	1,066.6	–817.0	–290.3	–357.5	–1,174.5
Indirectly related	722	1,548	943	654	574	825.2	–604.1	–289.4	–369.4	–973.5
As a percent of total employment										
Defense related	4.99	5.96	3.36	2.59	2.36	.97	–2.60	–.77	–1.00	–3.60
Civilian, Defense Department	1.07	.96	.61	.51	.49	–.10	–.36	–.10	–.12	–.48
Civilian, other Government	.02	.04	.02	.01	.01	.01	–.02	–.01	–.01	–.03
Armed Forces	2.17	1.92	1.14	1.00	.95	–.25	–.77	–.15	–.20	–.97
Private	1.73	3.04	1.59	1.07	.92	1.31	–1.46	–.52	–.67	–2.13
Directly related	.97	1.71	.88	.61	.54	.74	–.83	–.27	–.34	–1.17
Indirectly related	.76	1.33	.70	.45	.38	.57	–.62	–.25	–.33	–.95

[1] Total employed, including resident Armed Forces, plus Department of Defense estimates of Armed Forces overseas.

NOTE: Derived from BLS projections.

Chart 1. Employment related to defense spending, 1977–96, and projected 2002, and 2006



than the rate at which it declined during the previous decade. The total reduction in defense spending between the post-Vietnam War high in 1987 and the year 2006 is expected to amount to $151.9 billion. By 1996, $94.3 billion in cuts had transpired, leaving an additional reduction of $57.6 billion in defense spending through 2006. The estimates of real defense spending are based on Defense Department projections through 2002, and extended to 2006 based on BLS projections.[5] Employment attributed to these spending levels is projected to retract by 3.35 million jobs between 1987 and 2006. By 1996, nearly three-fourths of these job cutbacks had already taken place, leaving an expected reduction of another 897,000 jobs through 2006.[6]

The impact of reduced defense spending on overall employment is put in perspective when compared with the 1977–87 defense buildup. During that period, real defense spending increased rapidly by $142.8 billion, generating 2.2 million additional jobs. More than 283,000 jobs were created in the public sector, while an astounding 1.9 million jobs were produced in the private sector. These gains, shown in chart 1, were erased between 1987 and 1996 in the public sector—among the Armed Forces and civilian defense and nondefense Government workers. The negative impact of defense cutbacks on employment in the private sector over the same period was smaller than the increases experienced during the 1977–87 surge in defense spending. However, defense-related employment in the private sector is still expected to fall throughout the projected 1996–2006 period, and to drop below its 1977 post-Vietnam War low by 2002.[7]

The reductions in defense-related spending from 1996 through 2006 are expected to affect employment in the defense community dissimilarly. In the public sector, employment among the Armed Forces and civilians is projected to decline at a decreasing rate until it achieves a relatively stable level by 2002. In the private sector, direct defense-related employment is expected to continue declining, albeit at a decreasing rate, throughout the remainder of the projection period.[8]

Defense-related employment in the public sector, including the Armed Forces, fell 30.3 percent between 1987 and 1996. The greatest reduction occurred among members of the military, as troop strength fell by 703,000. Excluding the buildups associated with the Korean and Vietnam Wars, overall troop strength remained relatively constant from World War II up until the end of the Cold War in 1988. The 1987–96 period is the first time reductions in defense expenditures had a direct impact on the size of the Armed Forces. Further reductions among the Armed Forces and civilian Government employees will be tempered by our Nation's need to maintain a functional level of readiness, ongoing research and development, and weapon modernization programs. Defense-related private sector employment was pared by 40.1 percent between 1987 and 1996. This sector is expected to face an additional reduction of 727,000 jobs through 2006. The primary contraction is expected to transpire in indirect defense-related employment. This differs from the 1987–96 period, during which the greatest reduction occured in direct defense-related employment.

Industries

The impact of defense spending cutbacks on employment in the major industrial sectors is illustrated in table 2. Excluding the Federal Government, the areas of the economy that are

Table 2. Defense-related employment by major sector, 1977, 1987,1996, and projected 2002 and 2006

Sector	1977	1987	1996	2002	2006
Level					
Total defense-related employment	4,767.5	6,942.3	4,492.0	3,744.1	3,595.0
Agriculture, forestry, fisheries	11.1	23.8	13.9	10.7	9.9
Mining	21.1	25.3	12.2	8.1	6.7
Construction	100.1	164.0	96.8	79.9	79.5
Manufacturing	965.5	1,801.8	879.2	590.0	493.9
Transportation	96.6	154.5	122.9	90.3	83.8
Communications	23.1	41.1	21.2	13.3	10.7
Public utilities	15.6	27.6	13.2	10.3	9.1
Trade	161.6	329.6	206.2	126.1	102.6
Finance, insurance, and real estate	29.5	80.8	41.2	34.2	32.8
Services	228.2	895.7	716.5	580.4	567.1
Government (including military)	3,115.1	3,398.2	2,368.9	2,200.8	2,198.9
Change	**1977–87**	**1987–96**	**1996–2002**	**1996–2006**	**1987–2006**
Total defense-related employment	2,174.9	–2,450.4	–747.8	–896.9	–3,347.3
Agriculture, forestry, fisheries	12.7	–9.9	–3.2	–4.0	–13.9
Mining	4.2	–13.1	–4.1	–5.5	–18.6
Construction	63.9	–67.2	–16.9	–17.3	–84.5
Manufacturing	836.3	–922.6	–289.2	–385.3	–1,307.9
Transportation	57.9	–31.6	–32.6	–39.1	–70.7
Communications	18.0	–19.9	–7.9	–10.5	–30.4
Public utilities	12.0	–14.4	–2.9	–4.1	–18.5
Trade	168.0	–123.4	–80.1	–103.6	–227.0
Finance, insurance, and real estate	51.3	–39.6	–7.0	–8.4	–48.0
Services	667.5	–179.2	–136.1	–149.4	–328.6
Government (including military)	283.1	–1,029.3	–168.1	–170.0	–1,199.3

Table 3. Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	1977			1987			1996		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct	
Civilian employment (excluding military)	2,696.5	1,957.9	2.88	4,707.8	3,127.4	4.12	2,960.0	1,999.3	2.24
Agricultural production	6.9	.0	.25	11.3	.0	.48	6.3	.0	.28
Agricultural services	3.1	.4	.61	9.5	1.3	1.04	6.7	1.4	.51
Forestry, fishing, hunting, and trapping	1.1	.0	1.55	3.1	.0	2.42	.9	.0	1.12
Metal mining	5.3	–.9	5.79	4.0	–1.0	8.67	2.3	–.8	4.12
Coal mining	5.2	.3	2.28	5.3	.4	3.23	1.6	.2	1.69
Crude petroleum, natural gas, and gas liquids	6.7	.0	3.75	10.6	.0	4.93	5.2	.0	3.40
Oil and gas field services	1.3	.0	.59	1.5	.0	.75	.9	.0	.49
Nonmetallic minerals, except fuels	2.7	.0	2.25	3.8	.0	3.37	2.2	.0	2.01
Construction	100.1	88.5	2.07	164.0	141.4	2.58	96.8	90.0	1.40
Logging	2.6	.0	1.84	3.5	.0	2.88	2.0	.0	1.67
Sawmills and planing mills	5.4	.0	2.29	7.0	.0	3.38	3.5	.0	1.88
Millwork, plywood, and structural members	5.0	.0	2.26	8.8	.0	3.18	5.0	.0	1.69
Wood containers and miscellaneous wood products	3.0	.2	2.17	4.3	.2	2.98	2.7	.2	1.67
Wood buildings and mobile homes	.9	.2	1.08	.9	.1	1.21	.4	.1	.43
Household furniture	2.0	.2	.62	2.1	.2	.67	1.7	.1	.58
Partitions and fixtures	.5	.2	.84	.7	.1	.87	.4	.1	.46
Office and miscellaneous furniture and fixtures	.7	.3	.70	.8	.2	.58	.5	.1	.35
Glass and glass products	3.4	.2	1.72	5.5	.2	3.48	3.0	.2	1.98
Hydraulic cement	.7	.0	2.06	.7	.0	3.11	.3	.0	1.68
Stone, clay, and miscellaneous mineral products	6.1	.2	2.84	9.2	.5	5.13	5.1	.5	2.80
Concrete, gypsum, and plaster products	4.1	.0	2.01	5.8	.0	2.68	3.2	.0	1.48
Blast furnaces and basic steel products	22.9	.1	4.13	22.1	.0	8.24	10.0	.0	4.13
Iron and steel foundries	11.9	1.2	5.15	12.8	.2	9.86	6.8	.2	5.20
Primary nonferrous smelting and refining	4.6	.0	6.75	5.2	–.1	12.65	2.6	–.1	6.34
All other primary metals	2.9	.3	6.78	5.3	.3	12.43	2.9	.2	6.33
Nonferrous rolling and drawing	11.9	.6	5.95	19.5	.2	10.81	10.1	.2	6.05
Nonferrous foundries	6.6	.2	7.40	15.8	4.9	18.42	9.3	3.3	10.43
Metal cans and shipping containers	1.0	.4	1.20	.9	.3	1.60	.4	.2	1.12
Cutlery, handtools, and hardware	5.8	1.2	3.28	7.5	1.8	5.50	4.2	1.2	3.31
Plumbing and nonelectric heating equipment	2.1	.5	2.91	2.5	.3	3.96	1.3	.2	2.24
Fabricated structural metal products	21.7	10.8	4.55	23.2	5.0	5.44	14.8	3.9	3.25
Screw machine products, bolts, rivets, and others	6.8	.8	6.74	11.9	.9	12.66	6.8	.7	6.71
Metal forgings and stampings	11.3	.5	3.92	15.5	.3	6.67	9.0	.2	3.50
Metal coating, engraving, and allied services	7.0	1.0	7.25	16.3	.0	14.37	9.9	.0	7.33
Ordnance and ammunition	25.9	25.3	44.51	53.2	51.4	69.61	26.0	25.2	54.69
Miscellaneous fabricated metal products	9.8	2.5	3.96	16.3	1.9	7.32	9.1	1.4	3.54
Engines and turbines	12.5	8.1	9.98	17.2	11.2	19.01	7.4	4.9	8.83
Farm and garden machinery and equipment	.6	.2	.34	1.7	.3	1.73	.8	.2	.81
Construction and related machinery	5.4	2.8	1.54	8.3	5.2	3.92	4.1	2.6	1.75

Table 3. Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	1977			1987			1996		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct	
Metalworking machinery and equipment	10.4	2.6	2.89	20.7	2.5	6.49	11.1	1.7	3.18
Special industry machinery	2.8	1.2	1.55	2.6	.7	1.65	1.8	.4	1.01
General industrial machinery and equipment	8.7	3.0	3.12	16.4	5.4	6.93	10.2	3.8	3.89
Computer and office equipment	22.7	10.3	7.52	51.8	32.0	11.23	12.3	8.1	3.36
Refrigeration and service industry machinery	2.7	.7	1.51	3.7	.8	2.03	2.3	.6	1.08
Industrial machinery, n.e.c.	12.9	1.2	4.56	57.5	38.6	18.51	34.8	24.4	9.81
Electric distribution equipment	3.3	1.5	2.84	4.9	1.5	4.67	2.3	.8	2.76
Electrical industrial apparatus	13.6	4.9	6.05	19.4	3.8	10.89	8.3	2.1	5.26
Household appliances	1.8	.4	1.02	1.6	.3	1.21	1.1	.2	.88
Electric lighting and wiring equipment	4.9	1.0	2.35	7.7	.4	3.93	4.0	.2	2.24
Household audio and video equipment	2.3	.3	1.83	1.8	.1	2.11	.3	.0	.32
Communications equipment	31.4	23.4	14.96	57.7	40.2	20.49	27.3	18.6	10.03
Electronic components and accessories	42.0	11.0	10.65	177.7	75.4	29.49	70.4	26.5	11.47
Miscellaneous electrical equipment	8.1	5.2	5.70	19.0	11.4	11.44	10.2	7.4	6.65
Motor vehicles and equipment	12.2	9.5	1.29	14.7	9.3	1.69	5.4	2.1	.56
Aerospace	258.1	252.0	46.87	492.3	475.0	55.65	228.0	220.4	41.48
Ship and boat building and repairing	77.7	77.2	33.83	86.5	85.9	45.39	55.7	55.5	34.40
Railroad equipment	.6	.0	1.05	.9	.1	3.18	.4	.0	1.10
Miscellaneous transportation equipment	8.2	7.3	10.39	21.4	20.8	33.77	9.9	9.4	13.11
Search and navigation equipment	79.3	62.9	30.85	196.8	179.7	58.71	77.3	73.7	46.88
Measuring and controlling devices	26.5	18.8	9.69	33.8	15.2	10.85	19.0	7.4	6.41
Medical equipment, instruments, and supplies	2.7	2.1	1.63	3.1	2.1	1.41	2.2	1.4	.82
Ophthalmic goods	.8	.2	1.78	.4	.0	1.14	.4	.0	1.06
Photographic equipment and supplies	2.5	1.5	1.91	6.0	4.0	5.61	3.3	2.7	3.93
Watches, clocks, and parts	1.1	.8	3.61	.5	.3	4.10	.5	.4	5.84
Jewlery, silverware, and plated ware	.2	.0	.27	.2	.0	.36	.1	.0	.20
Toys and sporting goods	.6	.3	.46	1.0	.3	1.0	.4	.2	.34
Manufactured products, n.e.c.	3.3	1.0	1.22	5.1	1.3	2.11	2.9	.9	1.20
Meat products	.9	.5	.24	1.4	.4	.34	1.1	.3	.22
Dairy products	.3	.1	.15	.5	.1	.30	.3	.1	.19
Preserved fruits and vegetables	.3	.1	.12	.5	.1	.23	.4	.1	.15
Grain mill products and fats and oils	.7	.1	.35	1.0	.1	.60	.6	.1	.40
Bakery products	.6	.2	.25	.9	.1	.41	.6	.1	.29
Sugar and confectionery products	.3	.2	.24	.3	.1	.29	.2	.1	.18
Beverages	.4	.1	.17	.6	.0	.29	.3	.0	.18
Miscellaneous food and kindred products	.5	.2	.32	.7	.2	.41	.4	.2	.23
Tobacco products	.0	.0	.01	.0	.0	.02	.0	.0	.02
Weaving, finishing, yarn, and thread mills	9.5	1.3	1.73	9.8	1.4	2.42	5.1	.9	1.52
Knitting mills	2.5	.0	1.06	2.2	.0	1.01	1.4	.0	.77
Carpets and rugs	.9	.0	1.48	.9	.0	1.54	.1	.0	.14
Miscellaneous textile goods	1.0	.0	1.56	1.2	.0	2.32	.7	.0	1.27
Apparel	15.0	12.0	1.30	12.2	10.3	1.33	6.7	6.4	1.01
Miscellaneous fabricated textile products	3.1	.8	1.66	4.7	1.5	2.30	3.2	1.2	1.38
Pulp, paper, and paperboard mills	4.2	.1	1.60	7.8	.1	3.26	4.1	.0	1.81
Paperboard containers and boxes	2.9	.4	1.36	5.4	.3	2.65	3.5	.3	1.61
Converted paper products except containers	2.2	.3	1.02	4.7	.7	2.03	2.7	.5	1.12

Table 3. Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	1977			1987			1996		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct	
Newspapers	6.8	.1	1.66	16.2	.1	3.35	7.9	.1	1.73
Periodicals	.9	.0	1.12	3.3	.1	2.59	1.9	.1	1.31
Books	.6	.2	.59	1.7	.3	1.40	1.2	.3	.85
Miscellaneous publishing	.7	.0	1.43	2.6	.1	3.19	1.5	.1	1.63
Commercial printing and business forms	8.9	2.3	2.07	24.0	3.7	3.99	14.9	3.2	2.30
Greeting cards	.1	.0	.30	.1	.0	.55	.1	.0	.25
Blankbooks and bookbinding	.7	.2	1.14	1.7	.3	2.20	.9	.2	1.33
Service industries for the printing trade	1.0	.0	2.29	3.1	.0	5.06	1.7	.0	2.96
Industrial chemicals	12.4	5.6	3.78	15.0	5.4	5.36	9.0	3.8	3.42
Plastics materials and synthetics	5.5	.3	2.56	6.9	.0	4.02	3.8	.0	2.39
Drugs	1.9	1.4	1.06	3.6	2.8	1.69	2.4	1.8	.92
Soap, cleaners, and toilet goods	1.3	.6	1.01	1.9	.7	1.24	1.1	.5	.72
Paints and allied products	1.7	.0	2.64	2.6	.0	4.14	1.2	.0	2.34
Agricultural chemicals	.8	.1	1.14	1.0	.0	1.89	.6	.0	1.13
Miscellaneous chemical products	4.1	2.2	4.75	6.6	2.4	6.85	4.0	1.8	4.33
Petroleum refining	4.9	2.9	3.05	4.9	2.6	3.92	2.4	1.3	2.39
Miscellaneous petroleum and coal products	.9	.0	2.10	1.2	.1	3.02	.7	.0	1.73
Tires and inner tubes	1.9	.3	1.44	3.1	1.3	3.69	1.9	.9	2.31
Rubber products and plastic hose and footwear	8.1	3.6	4.06	9.9	3.0	5.80	6.1	2.2	3.23
Miscellaneous plastics products, n.e.c.	10.4	.7	2.43	26.9	.5	4.55	18.8	.3	2.62
Footwear, except rubber and plastic	.3	.2	.15	.4	.3	.41	.2	.2	.48
Luggage, handbags, and leather products, n.e.c.	.8	.4	.80	1.0	.5	1.81	.8	.5	1.54
Railroad transportation	14.6	6.5	2.67	10.5	2.9	3.39	4.5	1.6	1.96
Local and interurban passenger transit	1.5	1.2	.51	3.5	.5	1.04	1.4	.8	.30
Trucking and warehousing	50.7	31.0	3.61	85.4	46.6	4.95	59.3	33.8	3.03
Water transportation	11.1	9.0	5.58	7.2	5.1	4.00	4.4	3.8	2.41
Air transportation	14.1	8.4	3.61	35.4	17.2	5.85	41.4	23.8	3.67
Pipelines, except natural gas	.5	.1	2.81	.7	.1	3.72	.3	.1	2.34
Passenger transportation arrangement	1.5	.0	1.83	6.0	.0	3.42	5.8	.0	2.57
Miscellaneous transportation services	2.8	.0	3.26	5.9	.0	4.25	5.6	.0	2.64
Communications	23.1	9.0	1.94	41.1	15.0	3.18	21.2	7.2	1.55
Electric utilities	10.4	4.3	2.31	18.5	6.1	3.21	7.1	3.1	1.49
Gas utilities	3.8	.5	1.78	6.3	1.5	2.97	3.2	1.3	1.79
Water and sanitation	1.4	.8	1.60	2.9	.9	2.02	2.9	.9	1.21
Wholesale trade	98.4	33.4	1.97	213.5	67.5	3.46	124.2	32.7	1.83
Retail trade except eating and drinking places	41.2	.9	.37	60.0	2.5	.44	38.2	1.8	.25
Eating and drinking places	21.9	5.5	.51	56.1	10.7	.88	43.8	8.8	.57
Depository institutions	10.3	.0	.63	30.7	.0	1.36	13.3	.0	.65
Nondepository; holding and investment offices	3.4	.0	1.12	8.5	.0	1.47	4.9	.0	.67
Security and commodity brokers	1.1	.0	.53	4.3	.0	.82	2.4	.0	.37
Insurance carriers	4.8	.1	.42	10.1	.4	.71	4.8	.2	.32
Insurance agents, brokers, and services	2.1	.0	.42	5.4	.0	.71	2.8	.0	.32
Real estate	7.8	1.7	.74	21.9	2.6	1.35	13.0	2.0	.73
Royalties	.0	.0	.00	.0	.0	.00	.0	.0	.00
Owner-occupied dwellings	.0	.0	.00	.0	.0	.00	.0	.0	.00
Hotels and other lodging places	20.4	12.0	1.99	46.2	16.4	3.03	29.3	10.4	1.65
Laundry, cleaning, and shoe repair	1.3	.0	.27	5.2	1.5	.99	3.4	1.1	.62
Personal services, n.e.c.	.2	.0	.14	.2	.0	.07	.2	.0	.06

Table 3. Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	1977			1987			1996		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct	
Beauty and barber shops	.0	.0	.00	.0	.0	.00	.1	.0	.01
Funeral services and crematories	.0	.0	.01	.0	.0	.02	.0	.0	.03
Advertising	3.2	.1	2.17	10.8	.2	4.36	6.0	.1	2.18
Services to buildings	19.2	14.3	4.00	17.5	.0	1.95	10.5	.0	.95
Miscellaneous equipment rental and leasing	1.8	.0	2.30	8.2	.0	4.29	6.5	.0	2.37
Personnel supply services	6.6	.0	1.80	124.8	86.1	10.21	144.7	91.8	5.41
Computer and data processing services	7.8	5.0	4.05	58.1	33.8	8.47	50.3	21.8	3.77
Miscellaneous business services	15.7	1.1	1.81	96.2	29.8	5.98	74.6	24.1	3.14
Automotive rentals, without drivers	2.0	.1	1.76	5.6	.1	2.79	3.1	.0	1.55
Automobile parking, repair, and services	3.0	.6	.50	8.7	.8	.91	4.8	.3	.39
Electrical repair shops	2.6	1.6	2.48	2.8	.1	2.02	1.6	.0	1.15
Watch, jewelry, and furniture repair	.9	.8	1.26	.4	.4	.45	0.2	.2	.35
Miscellaneous repair services	13.3	8.7	4.88	23.9	13.5	6.96	16.8	10.7	4.39
Motion pictures	5.4	3.6	2.40	12.5	8.2	4.93	10.6	7.0	2.69
Video tape rental	.0	.0	.00	.1	.0	.10	.1	.0	.04
Producers, orchestras, and entertainers	2.4	1.3	1.92	7.5	4.1	3.49	4.9	2.8	1.81
Bowling centers	.1	.0	.13	.4	.0	.39	.1	.0	.17
Commercial sports	.0	.0	.04	.1	.0	.12	.2	.0	.18
Amusement and recreation services, n.e.c.	2.6	.5	.51	4.4	2.3	.64	4.6	1.7	.38
Offices of health practitioners	.0	.0	.00	.1	.0	.00	.0	.0	.00
Nursing and personal care facilities	.3	.0	.04	3	.0	.02	2.2	.0	.12
Hospitals	.5	.0	.02	–7.1	–8.2	–.23	–5.2	–5.8	–.13
Health services, n.e.c.	.0	.0	.02	.2	.2	04	.2	.2	.02
Legal services	5.4	.0	.93	23.1	4.5	2.27	12.6	3.9	1.11
Educational services	6.1	5.9	.53	29.8	23.0	1.93	32.9	20.1	1.54
Individual and miscellaneous social services	.0	.0	.00	.0	.0	.00	.1	.0	.01
Job training and related services	5.3	3.7	4.02	3.3	.4	1.43	2.7	.2	.87
Child day care services	.0	.0	.00	.0	.0	00	.1	.0	.01
Residential care	.0	.0	.01	.0	.0	.00	.0	.0	.00
Museums, botanical and zoological gardens	.0	.0	.03	.0	.0	.07	.0	.0	.05
Membership organizations	6.8	.0	.45	11.8	.0	.72	4.7	.0	.21
Engineering and architectural services	10.8	2.6	2.29	102.2	80.7	13.05	67.6	53.0	7.45
Research and testing services	60.7	58.8	19.89	151.3	145.1	31.72	105.5	100.0	18.15
Management and public relations	12.1	7.9	4.57	85.1	67.9	14.64	71.4	50.4	6.69
Accounting, auditing, and other services	11.3	4.8	2.28	62.1	31.4	7.92	48.9	29.9	5.17
Private households	.0	.0	.00	.0	.0	.00	.0	.0	.00
U.S. Postal Service	13.1	6.2	2.00	24.3	7.6	3.00	14.6	5.1	1.70
Federal electric utilities	.9	.0	2.33	1.1	.0	3.24	.4	.0	1.49
Federal Government enterprises, n.e.c.	.9	.0	.58	1.6	.0	0.99	.7	.0	.55
Federal general Government	1,020.5	1,020.5	54.37	1,122.3	1,122.3	57.82	814.0	814.0	46.78
Local government passenger transit	.6	.0	.52	2.0	.0	1.02	.5	.0	.26
State and local electric utilities	1.4	.0	2.33	2.6	.0	3.25	1.3	.0	1.51
State and local government enterprises, n.e.c.	6.7	.8	1.35	9.7	.9	1.70	5.4	.6	.90
State and local government hospitals	.0	.0	.00	.0	.0	.00	.0	.0	.00
State and local government education	.0	.0	.00	.0	.0	.00	.0	.0	.00
State and local general government, n.e.c.	.0	.0	.00	.0	.0	.00	.0	.0	.00

Table 3. **Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006**

[Thousands of jobs]

Industry	2002			2006		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct	
Civilian employment (excluding military)	2,301.3	1,634.4	1.61	2,152.2	1,566.7	1.43
Agricultural production	4.4	.0	.21	3.7	.0	.19
Agricultural services	5.6	1.2	.38	5.6	1.3	.36
Forestry, fishing, hunting, and trapping	.7	.0	.90	.5	.0	.76
Metal mining	1.0	–.6	1.95	.6	–.5	1.39
Coal mining	.9	.1	1.37	.6	.1	1.10
Crude petroleum, natural gas, and gas liquids	3.8	.0	3.11	3.2	.0	3.08
Oil and gas field services	1.0	.0	.61	1.0	.0	.65
Nonmetallic minerals, except fuels	1.5	.0	1.42	1.3	.0	1.27
Construction	79.9	72.2	1.10	79.5	71.8	1.05
Logging	1.5	.0	1.22	1.3	.0	1.05
Sawmills and planing mills	2.5	.0	1.39	2.3	.0	1.27
Millwork, plywood, and structural members	3.8	.0	1.24	3.6	.0	1.14
Wood containers and miscellaneous wood products	1.8	.1	1.10	1.6	.1	.94
Wood buildings and mobile homes	.4	.1	.43	.4	.1	.46
Household furniture	1.0	.1	.37	.9	.1	.33
Partitions and fixtures	.4	.1	.38	.3	.1	.34
Office and miscellaneous furniture and fixtures	.4	.1	.22	.3	.1	.19
Glass and glass products	1.9	.1	1.36	1.5	.1	1.18
Hydraulic cement	.2	.0	1.30	.2	.0	1.19
Stone, clay, and miscellaneous mineral products	3.3	.4	2.00	2.8	.3	1.81
Concrete, gypsum, and plaster products	2.4	.0	1.10	2.2	.0	1.03
Blast furnaces and basic steel products	5.5	.0	2.58	4.0	.0	2.02
Iron and steel foundries	3.8	.1	3.11	2.7	.1	2.36
Primary nonferrous smelting and refining	1.3	.0	3.56	.9	.0	2.56
All other primary metals	1.6	.1	3.65	1.2	.1	2.77
Nonferrous rolling and drawing	5.4	.1	3.39	3.8	.1	2.45
Nonferrous foundries	6.1	2.6	6.88	5.2	2.4	5.81
Metal cans and shipping containers	.3	.1	.77	.2	.1	.66
Cutlery, handtools, and hardware	2.7	.9	2.30	2.2	.8	1.96
Plumbing and nonelectric heating equipment	1.0	.2	1.73	.9	.1	1.61
Fabricated structural metal products	9.9	3.1	2.19	8.7	2.9	1.92
Screw machine products, bolts, rivets, and others	4.2	.5	4.37	3.3	.5	3.51
Metal forgings and stampings	4.8	.2	2.04	3.4	.2	1.52
Metal coating, engraving, and allied services	5.7	.0	4.07	4.3	.0	2.97
Ordnance and ammunition	18.6	17.9	42.09	14.9	14.2	35.50
Miscellaneous fabricated metal products	5.8	1.1	2.29	4.7	1.0	1.88
Engines and turbines	4.8	3.3	6.14	3.8	2.8	5.22
Farm and garden machinery and equipment	.6	.1	.63	.5	.1	.57
Construction and related machinery	2.6	1.9	1.09	2.2	1.6	.87
Metalworking machinery and equipment	6.6	1.4	1.88	4.8	1.3	1.38
Special industry machinery	1.0	.3	.55	.8	.3	.46
General industrial machinery and equipment	6.4	2.9	2.50	5.3	2.6	2.10

Table 3. Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	2002			2006		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct	
Computer and office equipment	5.4	3.8	1.62	1.5	1.1	.48
Refrigeration and service industry machinery	1.5	.5	.67	1.2	.4	.55
Industrial machinery, n.e.c.	23.0	17.9	6.19	19.1	15.6	4.99
Electric distribution equipment	1.5	.6	2.01	1.2	.6	1.80
Electrical industrial apparatus	4.0	1.5	2.92	2.6	1.2	2.08
Household appliances	.6	.1	.58	.5	.1	.48
Electric lighting and wiring equipment	2.5	.2	1.45	1.9	.2	1.18
Household audio and video equipment	.2	.0	.25	.2	.0	.23
Communications equipment	16.6	11.9	6.32	12.4	9.0	4.83
Electronic components and accessories	40.6	17.4	6.12	27.4	12.0	3.91
Miscellaneous electrical equipment	6.6	4.9	4.31	5.2	3.9	3.43
Motor vehicles and equipment	3.3	1.5	.35	2.7	1.3	.29
Aerospace	183.6	178.6	31.82	173.4	169.0	29.09
Ship and boat building and repairing	41.1	40.9	26.91	36.7	36.6	25.01
Railroad equipment	.2	39.6	.50	.2	.0	.36
Miscellaneous transportation equipment	7.0	6.6	8.78	6.0	5.7	7.32
Search and navigation equipment	37.4	33.6	28.54	25.1	21.7	22.35
Measuring and controlling devices	10.6	5.0	3.84	8.1	4.1	3.05
Medical equipment, instruments, and supplies	1.7	1.1	.58	1.6	1.0	.50
Ophthalmic goods	.2	.0	.59	.1	.0	.43
Photographic equipment and supplies	2.3	1.9	3.11	1.8	1.5	2.72
Watches, clocks, and parts	.3	.2	4.99	.3	.2	4.90
Jewlery, silverware, and plated ware	.1	.0	.25	.1	.0	.25
Toys and sporting goods	.4	.1	.30	.4	.1	.27
Manufactured products, n.e.c.	2.0	.7	.83	1.7	.6	.70
Meat products	.9	.3	.16	.8	.3	.14
Dairy products	.2	.1	.14	.2	.0	.12
Preserved fruits and vegetables	.2	.0	.09	.2	.0	.08
Grain mill products and fats and oils	.4	.1	.27	.4	.1	.24
Bakery products	.4	.1	.19	.3	.1	.16
Sugar and confectionery products	.1	.1	.14	.1	.1	.12
Beverages	.2	.0	.10	.1	.0	.08
Miscellaneous food and kindred products	.3	.1	.15	.3	.1	.13
Tobacco products	.0	.0	.00	.0	.0	.00
Weaving, finishing, yarn, and thread mills	3.8	.7	1.19	3.3	.6	1.07
Knitting mills	1.2	.0	.69	1.1	.0	.66
Carpets and rugs	.2	.0	.23	.2	.0	.21
Miscellaneous textile goods	.4	.0	.89	.4	.0	.75
Apparel	5.1	4.8	.93	4.5	4.2	.93
Miscellaneous fabricated textile products	2.5	1.0	1.02	2.3	.9	.90
Pulp, paper, and paperboard mills	2.6	.0	1.22	2.1	.0	1.02
Paperboard containers and boxes	2.4	.2	1.04	2.1	.2	.86
Converted paper products except containers	1.9	.4	.78	1.7	.4	.66
Newspapers	5.0	.1	1.17	4.0	.1	.98
Periodicals	1.3	.0	.85	1.0	.0	.69
Books	.8	.2	.56	.7	.2	.46
Miscellaneous publishing	.9	.1	1.02	.7	.1	.82

Table 3. Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	2002			2006		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct	
Commercial printing and business forms	10.3	2.3	1.59	8.8	2.1	1.36
Greeting cards	.1	.0	.17	.1	.0	.16
Blankbooks and bookbinding	.7	.2	.98	.6	.2	.84
Service industries for the printing trade	1.1	.0	2.07	.8	.0	1.69
Industrial chemicals	6.3	2.9	2.42	5.6	2.8	2.14
Plastics materials and synthetics	2.2	.0	1.48	1.7	.0	1.20
Drugs	1.8	1.4	.61	1.7	1.4	.53
Soap, cleaners, and toilet goods	.8	.4	.50	.7	.4	.44
Paints and allied products	.8	.0	1.54	.7	.0	1.26
Agricultural chemicals	.4	.0	.78	.4	.0	.69
Miscellaneous chemical products	2.7	1.3	3.08	2.3	1.2	2.74
Petroleum refining	1.5	.8	1.70	1.1	.6	1.43
Miscellaneous petroleum and coal products	.5	.0	1.20	.4	.0	1.06
Tires and inner tubes	1.2	.7	1.74	.9	.5	1.55
Rubber products and plastic hose and footwear	3.9	1.6	2.14	3.2	1.4	1.79
Miscellaneous plastics products, n.e.c.	13.6	.3	1.70	11.7	.2	1.36
Footwear, except rubber and plastic	.2	.1	.45	.2	.1	.48
Luggage, handbags, and leather products, n.e.c.	.5	.3	1.20	.4	.2	1.13
Railroad transportation	2.9	1.1	1.35	2.2	.9	1.11
Local and interurban passenger transit	2.4	.5	.44	2.3	.5	.40
Trucking and warehousing	43.1	25.1	2.06	39.7	23.2	1.82
Water transportation	3.1	2.6	1.71	2.6	2.2	1.49
Air transportation	29.6	17.5	2.30	27.8	17.8	1.97
Pipelines, except natural gas	.2	.1	1.58	.2	.1	1.36
Passenger transportation arrangement	4.2	.0	1.58	3.9	.0	1.34
Miscellaneous transportation services	4.9	.0	1.75	5.0	.0	1.48
Communications	13.3	4.9	.97	10.7	4.2	.77
Electric utilities	5.5	2.0	1.15	4.6	1.7	.98
Gas utilities	2.2	.9	1.35	1.9	.8	1.20
Water and sanitation	2.6	.9	.87	2.6	1.0	.74
Wholesale trade	73.6	23.3	1.02	57.1	20.0	.75
Retail trade except eating and drinking places	23.0	1.4	.14	19.5	1.2	.12
Eating and drinking places	29.5	7.4	.34	26.0	7.3	.28
Depository institutions	10.4	.0	.52	9.3	.0	.47
Nondepository; holding and investment offices	4.8	.0	.56	5.5	.0	.58
Security and commodity brokers	2.4	.0	.31	2.4	.0	.28
Insurance carriers	4.2	.2	.26	4.0	.2	.23
Insurance agents, brokers, and services	2.3	.0	.25	2.2	.0	.23
Real estate	10.2	1.6	.53	9.5	1.5	.47
Royalties	.0	.0	.0	.0	.0	.0
Owner-occupied dwellings	.0	.0	.0	.0	.0	.0
Hotels and other lodging places	24.3	9.9	1.26	23.7	10.3	1.16
Laundry, cleaning, and shoe repair	2.5	0.9	.44	2.2	.8	.39
Personal services, n.e.c.	.2	.0	.0	.1	.0	.03
Beauty and barber shops	.0	.0	.0	.0	.0	.00
Funeral services and crematories	.0	.0	.0	.0	.0	.01
Advertising	4.4	.1	1.50	3.9	.1	1.28
Services to buildings	8.4	.0	.68	7.9	.0	.59

Table 3. Continued—Defense-related employment for selected industries, 1977, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Industry	2002			2006		
	Defense related		Defense-related share of total employment (percent)	Defense related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct	
Miscellaneous equipment rental and leasing	5.2	.0	1.56	4.9	.0	1.32
Personnel supply services	119.9	71.5	3.48	117.9	67.4	2.89
Computer and data processing services	47.0	17.3	2.28	49.8	16.6	1.81
Miscellaneous business services	57.8	18.9	2.10	55.2	18.2	1.81
Automotive rentals, without drivers	2.4	.0	1.06	2.2	.0	.87
Automobile parking, repair, and services	4.1	.2	.28	4.0	.3	.24
Electrical repair shops	1.2	.0	.80	1.1	.0	.68
Watch, jewelry, and furniture repair	.2	.2	.27	.2	.2	.24
Miscellaneous repair services	12.9	8.1	3.07	12.3	8.2	2.78
Motion pictures	7.6	5.2	1.69	7.1	5.0	1.46
Video tape rental	.0	.0	.02	.0	.0	.02
Producers, orchestras, and entertainers	3.7	2.1	1.14	3.6	2.1	.98
Bowling centers	.1	.0	.17	.1	.0	.18
Commercial sports	.2	.0	.14	.2	.0	.13
Amusement and recreation services, n.e.c.	3.1	1.7	.21	3.0	1.8	.18
Offices of health practitioners	.0	.0	.00	.0	.0	.00
Nursing and personal care facilities	.7	.0	.03	.1	.0	.00
Hospitals	–4.1	–4.5	–.10	–3.9	–4.4	–.09
Health services, n.e.c.	.2	.2	.01	.2	.2	.01
Legal services	11.1	2.9	.86	10.6	2.9	.75
Educational services	25.3	17.3	1.05	24.6	17.2	.94
Individual and miscellaneous social services	.1	.0	.0	.1	.0	.00
Job training and related services	2.2	.2	.62	2.2	.2	.56
Child day care services	.1	.0	.00	.1	.0	.00
Residential care	.0	.0	.00	.0	.0	.00
Museums, botanical and zoological gardens	.0	.0	.02	.0	.0	.02
Membership organizations	3.0	.0	.13	2.7	.0	.11
Engineering and architectural services	52.9	41.5	5.13	51.4	40.3	4.57
Research and testing services	78.9	73.9	11.72	71.7	66.7	9.65
Management and public relations	65.0	46.9	4.69	67.9	49.3	4.11
Accounting, auditing, and other services	39.8	25.2	3.72	40.2	27.2	3.46
Private households	.0	.0	.00	.0	.0	.00
U.S. Postal Service	10.6	3.7	1.22	9.5	3.3	1.08
Federal electric utilities	.3	.0	1.18	.2	.0	.96
Federal Government enterprises, n.e.c.	.7	.0	.45	.7	.0	.44
Federal general Government	741.0	741.0	44.78	741.0	741.0	46.31
Local government passenger transit	.9	.0	.44	.9	.0	.41
State and local electric utilities	1.1	.0	1.14	1.0	.0	.98
State and local government enterprises, n.e.c.	3.4	.4	.63	2.7	.4	.56
State and local government hospitals	.0	.0	.00	.0	.0	.00
State and local government education	.0	.0	.00	.0	.0	.00
State and local general government, n.e.c.	.0	.0	.00	.0	.0	.00

n.e.c. = not elsewhere classified.

Table 4. Industries most heavily dependent on defense spending, 1996

[Percent of total employment]

Industry	Defense-related share of employment
Ordnance and ammunition	54.7
Search and navigation equipment	46.9
Federal general Government	46.8
Aerospace	41.5
Ship and boat building and repairing	34.4
Research and testing services	18.2
Miscellaneous transportation equipment	13.1
Electronic components and accessories	11.5
Nonferrous foundries	10.4
Communications equipment	10.0
Industrial machinery, n.e.c.	9.8
Engines and turbines	8.8
Engineering and architectural services	7.5
Metal coating, engraving, and allied services	7.3
Screw machine products, bolts, rivets, and others	6.7
Management and public relations	6.7
Miscellaneous electrical equipment	6.7
Measuring and controlling devices	6.4
Primary nonferrous smelting and refining	6.3
All other primary metals	6.3

n.e.c. = not elsewhere classified.

expected to absorb the continued reduction in defense-related employment between 1996 and 2006 are manufacturing (–385,000 jobs), services (–149,000 jobs), and retail and wholesale trade (–103,600 jobs). These industries also experienced large defense-related employment losses during the 1987–96 period. Estimates of defense-related employment by detailed industry are provided in table 3. Over the 1996–2006 period, sizable job reductions are projected for many industries with substantial concentrations of defense-related employment, including the aerospace, search and navigation equipment, shipbuilding, electronic components, research and testing, and engineering and architectural services industries. (See table 4.) Correspondingly, further employment reductions are anticipated in the industries, responsible for supplying goods and services to these industries, such as wholesale trade, construction, computer and office equipment, and trucking and warehousing industries.

The most notable reductions in defense-related employment over the historical and projected periods are in the Federal general Government. (See table 5.) Fewer civilian defense employees are required to manage complex defense procurement programs, and funding for extensive research and development programs is reduced. Nearly 90 percent of the total reduction in troop strength from 1987 to the projected year 2006 has materialized. Four rounds of base realignment and closure in 1988, 1991, 1993, and 1995 made substantial progress in eliminating excess military infrastructure. The greatest impact of these closures is felt in smaller communities where many businesses rely directly or indirectly on defense dollars as a primary source of demand for their products. The Department of Defense provides grants and transition assistance to help communities plan for reuse and to attract new civilian employers.

The ongoing reductions in force strength and infrastructure by the Department of Defense are strategically designed to ensure the success of the Armed Forces in carrying out its missions under a constrained budget climate. The Department of Defense budget plan calls for military spending to be greatly reduced across all categories—personnel, operations and maintenance, procurement, research, development, testing and evaluation, revolving and management funds, military construction, and family housing. However, under a climate of fiscal austerity, the military community faces a significant dilemma of how to invest in technology and weapons modernization programs while meeting current obligations. During the previous decade, as funding shrank, money earmarked for modernization was delayed and redirected to pay current bills for operation and support.[9] In order to replace Cold War-era equipment reaching the end of its service life and to maintain technical superiority with new systems, ongoing investment in modernization, supported by research, development, testing, and evaluation, is essential. To reduce excess operations and maintenance costs further, and to modernize and improve overall readiness by directing available resources to existing forces instead of bases, two more rounds of base realignment and closures are anticipated by the Department of Defense, in 2001 and 2005.[10] Currently, Congress is examining the costs and benefits of maintaining retail activities at military installations.[11]

Job reductions stemming from the decline in defense expenditures have been, and are expected to continue to be, slightly greater in the manufacturing industries than in the service industries. The manufacturing industries that are projected to be hit hardest are those most heavily dependent on defense spending—aerospace, and search and navigation equipment. Also, the decline in demand for shipping those manufactured goods and constructing base housing and infrastructures will continue to negatively affect employment in the transportation and construction industries.

Among the service industries, employment cutbacks are ongoing in research and testing, engineering and architectural, miscellaneous business, and personnel supply services. These industries traditionally supply the defense community with a broad range of technical knowledge and administrative support. The reduced availability of research funds, the paring

Table 5. Industries with the largest level changes in defense-related employment, 1977–1987 and projected 1987–2006, and 1996–2006

[Thousands of jobs]

Industry	1977–87	1987–96	1996–2002	1996–2006	1987–2006
Federal general Government	101.8	–308.3	–73.0	–73.0	–381.3
Aerospace	234.2	–264.3	–44.4	–54.6	–319.0
Search and navigation equipment	117.5	–119.5	–39.9	–52.2	–171.7
Wholesale trade	115.1	–89.3	–50.6	–67.1	–156.4
Electronic components and accessories	135.8	–107.3	–29.8	–43.0	–150.4
Construction	63.9	–67.2	–16.9	–17.3	–84.5
Research and testing services	90.6	–45.8	–26.6	–33.8	–79.6
Engineering and architectural services	91.5	–34.6	–14.7	–16.2	–50.9
Computer and office equipment	29.1	–39.5	–6.9	–10.8	–50.3
Ship and boat building and repairing	8.8	–30.8	–14.6	–19.0	–49.8
Trucking and warehousing	34.7	–26.1	–16.2	–19.7	–45.7
Communications equipment	26.3	–30.4	–10.7	–14.9	–45.3
Miscellaneous business services	80.5	–21.6	–16.8	–19.5	–41.1
Retail trade excluding eating and drinking places	18.8	–21.8	–15.2	–18.7	–40.5
Personnel supply services	118.2	–19.9	–24.8	–26.8	–6.9

Table 6. Defense-related occupational employment by major sector, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Occupation	1987	1996	2002	2006	1987–96	1996–2002	1996–2006	1987–2006
Total, civilian defense-related employment	4,707.8	2,959.8	2,301.3	2,152.3	–1,748.0	–658.5	–807.6	–2,555.6
Executive, administrative, and managerial occupations	586.9	379.2	304.4	289.9	–207.7	–74.8	–89.3	–297.0
Professional specialty occupations	646.8	420.6	357.4	354.0	–226.1	–63.2	–66.7	–292.8
Technicians and related support occupations	297.6	188.9	151.3	144.1	–108.7	–37.5	– 44.8	–153.5
Marketing and sales occupations	191.5	141.0	104.3	93.9	–50.5	–36.7	–47.1	–97.6
Administrative support occupations, including clerical	934.5	588.0	454.9	423.0	–346.5	–133.1	–165.1	–511.5
Service occupations	287.7	200.9	155.0	144.0	–86.8	–45.9	–56.8	–143.7
Agriculture, forestry, fishing, and related occupations	45.6	27.7	21.9	20.7	–17.9	–5.7	–6.9	–24.8
Precision production, craft, and repair occupations	851.1	505.5	389.2	361.6	–345.5	–116.4	–143.9	–489.5
Operators, fabricators, and laborers	880.5	517.0	370.5	328.7	–363.5	–146.5	–188.3	–551.8

down of weapons programs, and ongoing base realignments and closures are decreasing the need for the services provided by these industries. Interestingly, employment gains during the 1977–87 defense buildup in the engineering and architectural, miscellaneous business, and personnel supply services industries will not be erased by the projected cutbacks in spending. Firms in these industries provide specific services, such as information system design, risk assessment, or training, on a contractual basis. When their obligations are met, their services are terminated. Contractual hiring provides employers with a smaller, more flexible work force that is able to adjust effectively to the fluctuations in demand for their services.

Reduced defense spending and employment levels through 2006 are projected to continue having an impact on a variety of other industries. Substantial cuts in employment have already been realized throughout the public sector and in manufacturing and service industries directly involved in defense-related activities. Future reductions in employment are projected to be concentrated in the private sector and include many nondefense-related industries. Many areas of the country are affected by the cutbacks in defense, as funds awarded

Table 7. Defense-related employment by major grouping and selected occupations, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Occupation	1987			1996			2002			2006		
	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct		Total	Direct	
Total, all occupations	4,707.8	3,127.4	4.51	2,959.8	1,998.8	2.43	2,301.3	1,723.7	1.75	2,152.3	1,567.3	1.55
Executive, administrative, and managerial occupations	586.9	412.6	5.79	379.2	273.0	3.23	304.4	240.5	2.36	289.9	221.4	2.12
Accountants and auditors	64.4	42.6	7.81	43.1	30.8	4.83	35.4	27.9	3.72	34.1	26.1	3.45
Budget analysts	16.5	15.5	27.13	11.1	10.5	16.86	9.6	9.7	13.64	9.6	9.2	13.03
Management analysts	26.2	25.0	39.10	20.0	18.9	14.99	17.6	17.7	11.76	17.8	17.0	11.01
Purchasing agents, except wholesale, retail,and farm products	51.2	46.2	26.38	34.0	31.0	15.36	28.5	28.2	12.44	28.0	26.5	11.89
All other managers and administrators	199.2	116.0	4.16	117.2	68.5	2.25	88.6	57.0	1.55	80.9	50.4	1.33
All other management support workers	82.0	66.8	8.59	54.7	44.9	4.43	45.9	40.5	3.32	45.0	37.8	3.02
Professional specialty occupations	646.8	534.9	5.05	420.6	344.9	2.52	357.4	314.6	1.86	354.0	296.4	1.66
Aeronautical and astronautical engineers	36.7	35.2	49.43	14.8	14.1	28.21	11.9	12.1	21.72	11.4	10.9	20.07
Civil engineers, including traffic engineers	24.3	21.3	13.81	16.4	14.6	8.96	14.0	13.2	6.89	13.8	12.4	6.37
Electrical and electronics engineers	95.9	78.4	22.77	51.6	45.2	14.57	43.1	40.8	10.45	42.1	38.1	9.21
Industrial engineers, except safety engineers	25.0	20.1	19.52	11.5	9.5	10.28	9.3	8.5	7.74	9.0	7.9	7.05
Mechanical engineers	44.4	36.8	20.61	26.2	22.2	11.72	20.9	19.2	8.54	19.7	17.4	7.61
Metallurgists and metallurgical, ceramic, and materials engineers	4.5	3.6	24.04	2.9	2.4	15.64	2.2	2.1	11.72	2.1	1.9	10.63
Nuclear engineers	3.7	3.4	24.84	2.5	2.3	18.12	2.1	2.0	14.61	2.0	1.9	13.93
All other engineers	49.9	44.0	21.46	36.7	32.0	11.63	30.3	28.7	8.84	29.3	26.6	8.10
Surveyors	14.1	12.1	15.55	8.7	7.5	9.37	6.9	6.4	7.51	6.5	5.8	7.12
Computer engineers, scientists, and systems analysts	29.0	20.6	8.02	38.9	26.8	4.45	40.0	28.4	2.93	44.8	29.5	2.44
Mathematicians and all other mathematical scientists	2.8	2.6	17.49	1.7	1.7	12.19	1.5	1.5	9.87	1.5	1.4	9.43
Operations research analysts	9.2	8.0	17.95	5.4	4.7	11.12	4.4	4.1	8.71	4.3	3.8	8.15
Physicists and astronomers	5.6	5.1	28.44	3.3	3.1	18.33	2.6	2.7	14.82	2.5	2.4	14.16
All other physical scientists	11.3	10.8	25.03	6.8	6.4	17.10	5.9	5.9	12.75	5.9	5.5	11.53
All other social scientists	8.7	8.5	26.73	6.2	6.0	16.08	5.4	5.6	13.73	5.5	5.3	13.60
Directors, religious activities and education	.3	.0	.73	.2	–	.21	.1	–	.14	.1	–	.11
All other professional workers	82.8	73.4	8.80	53.1	46.4	3.86	46.1	43.0	2.94	46.2	40.9	2.70
Technicians and related support occupations	297.6	239.1	8.13	188.9	154.4	4.15	151.3	133.6	2.98	144.1	121.7	2.64
Electrical and electronic technicians and technologists	51.2	38.4	15.40	25.4	20.1	8.58	19.3	16.8	6.01	17.6	14.9	5.21
Drafters	34.6	25.1	11.67	19.0	13.8	6.21	13.1	10.2	4.24	11.3	8.3	3.62
All other engineering technicians and technologists	72.1	62.8	19.42	47.5	41.7	11.97	37.9	36.0	9.18	35.9	32.7	8.47
Science and mathematics technicians	56.2	51.6	23.82	39.5	37.2	17.49	34.2	34.4	14.07	34.2	32.7	13.39
Computer programmers	38.8	26.5	8.09	24.6	16.7	4.48	19.4	13.8	3.15	18.3	12.2	2.75
Programmers, numerical, tool, and process control	1.7	1.4	21.88	.8	.7	12.13	.6	.6	8.78	.6	.5	7.79
Marketing, sales, and service occupations	479.2	222.2	1.81	341.9	158.4	1.04	259.3	135.9	.72	237.9	123.0	.62
Salespersons, retail	30.1	10.1	.86	19.0	6.9	.49	13.7	6.3	.33	12.1	5.9	.28

Table 7. Continued—Defense-related employment by major grouping and selected occupations, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Occupation	1987			1996			2002			2006		
	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct		Total	Direct	
Securities and financial services salesworkers	1.6	0.0	1.06	0.9	–	0.47	0.9	–	0.38	1.0	–	.36
Travel agents	4.3	.1	3.96	3.2	.0	2.63	2.5	.0	1.72	2.3	.0	1.43
All other sales and related workers	124.1	52.5	3.75	90.7	39.7	1.94	66.9	33.0	1.28	60.0	29.3	1.06
Janitors and cleaners, including maids and housekeepers	83.8	43.4	3.28	53.3	26.4	1.78	39.4	20.9	1.29	35.4	18.0	1.15
Hairdressers, hairstylists, and cosmetologists	.1	.0	.05	.2	.0	.06	.1	.0	.03	0.1	.0	.02
Guards	47.8	28.6	6.60	33.3	18.9	3.49	26.4	15.7	2.45	24.9	13.9	2.12
Administrative support occupations, including clerical	934.5	608.2	4.44	588.0	395.5	2.50	454.9	339.0	1.85	423.0	306.5	1.67
All other communications equipment operators	1.9	1.7	11.87	1.2	1.2	13.86	1.1	1.1	15.43	1.1	1.1	18.24
Procurement clerks	10.5	9.5	25.25	6.7	6.1	11.83	5.7	5.6	10.15	5.6	5.3	10.08
Production, planning, and expediting clerks	34.8	27.0	15.85	19.3	15.2	8.12	14.6	12.6	5.91	13.3	11.2	5.26
Stock clerks	72.5	52.1	3.88	44.4	33.2	2.41	35.4	29.9	1.89	33.5	27.8	1.77
Bookkeeping, accounting, and auditing clerks	95.2	62.7	4.82	58.5	41.1	2.90	45.2	35.7	2.31	41.8	32.5	2.18
Personnel clerks, except payroll and timekeeping	21.7	19.8	17.24	15.0	13.9	12.08	12.9	12.8	10.29	12.8	12.2	10.18
Secretaries, except legal and medical	155.8	110.5	5.70	88.2	65.5	3.13	67.7	55.4	2.45	62.5	49.5	2.29
Typists and word processors	32.9	19.4	3.57	13.2	7.4	2.08	8.6	5.0	1.50	7.1	3.9	1.33
Bank tellers	7.2	.0	1.38	3.5	.0	.65	2.9	.0	.52	2.7	.0	.50
Clerical supervisors and managers	53.3	34.9	4.63	36.2	24.9	2.65	29.4	22.2	1.94	28.2	20.5	1.73
Loan interviewers	.3	.0	1.37	.1	.0	.65	.1	.0	.52	.1	.0	.50
General office clerks	99.6	63.1	4.12	68.4	44.2	2.21	50.8	36.5	1.58	45.9	32.2	1.39
All other clerical and administrative support workers	105.2	75.6	6.65	73.9	55.3	3.98	59.6	49.1	2.98	56.8	45.4	2.71
Agriculture, forestry, fishing, and related occupations	31.3	6.0	1.44	18.7	4.1	.83	14.3	3.6	.61	13.1	3.4	.55
Animal caretakers, except farm	1.9	1.1	2.63	.9	.5	.99	.8	.4	.69	.7	.4	.60
Precision production, craft, and repair occupations	851.1	613.1	7.03	505.5	379.8	3.94	389.2	324.6	2.91	361.6	293.4	2.63
Blue-collar worker supervisors	118.8	80.2	7.26	67.2	47.2	3.93	50.6	40.0	2.92	46.1	35.8	2.63
Electronics repairers, commercial and industrial equipment	24.0	22.7	36.33	16.9	16.2	31.73	14.8	15.2	25.83	14.9	14.5	24.78
All other electrical and electronic equipment mechanics, installers, and repairers	9.1	8.0	21.06	5.9	5.3	13.77	4.9	4.7	10.69	4.8	4.4	9.94
Industrial machinery mechanics	30.3	17.6	6.84	18.2	11.4	4.09	13.6	9.7	2.95	12.3	8.7	2.61
Maintenance repairers, general utility	42.1	24.6	4.21	29.4	17.7	2.23	22.8	15.4	1.56	21.2	14.0	1.35
Aircraft engine specialists	8.3	7.9	50.66	6.1	5.9	26.26	5.2	5.4	21.49	5.2	5.0	20.69
Aircraft mechanics	33.5	31.1	33.61	22.1	20.6	19.93	18.7	18.7	15.55	18.3	17.5	14.50
Mobile heavy equipment mechanics	17.0	15.0	17.35	11.7	10.6	11.78	10.1	10.0	9.80	10.1	9.5	9.54
Precision instrument repairers	5.5	4.0	12.20	3.4	2.6	8.75	2.6	2.3	6.87	2.4	2.0	6.44
Riggers	4.7	4.4	33.03	2.8	2.7	29.98	2.3	2.4	28.10	2.2	2.2	29.61

Table 7. Continued—Defense-related employment by major grouping and selected occupations, 1987, 1996, and projected 2002 and 2006

[Thousands of jobs]

Occupation	1987			1996			2002			2006		
	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)	Defense-related		Defense-related share of total employment (percent)
	Total	Direct		Total	Direct		Total	Direct		Total	Direct	
Aircraft assemblers, precision	16.9	16.3	55.47	10.2	9.9	41.38	8.2	8.5	31.59	7.9	7.7	29.04
Electrical and electronic equipment assemblers, precision	30.6	21.0	19.51	16.2	11.2	8.33	9.7	7.4	5.01	7.6	5.6	3.93
All other precision assemblers	7.7	6.0	23.49	4.2	3.3	11.03	2.9	2.4	7.17	2.4	2.0	5.92
Inspectors, testers, and graders, precision	77.4	53.3	11.80	37.8	26.1	6.00	25.5	19.5	4.14	21.5	16.1	3.56
Machinists	52.9	36.6	13.72	30.1	21.7	7.90	21.5	17.7	5.67	19.0	15.4	5.01
Shipfitters	6.4	6.4	47.63	4.1	4.1	43.66	3.3	3.5	35.60	3.2	3.2	34.18
Operators, fabricators, and laborers	880.5	491.2	5.55	517.0	288.8	3.01	370.5	231.8	2.05	328.7	201.5	1.76
Numeric control machine tool operators and tenders, metals and plastics	14.0	11.2	22.07	8.7	6.5	9.41	6.8	5.7	6.37	6.3	5.2	5.41
Electrolytic plating machine operators and tenders, setters, and set-up operators, metals and plastics	7.2	3.3	17.07	3.7	1.5	8.91	2.5	1.2	5.62	2.1	1.1	4.55
Electronic semiconductor processors	7.1	4.5	19.06	5.2	3.2	8.87	3.0	2.0	4.84	2.3	1.5	3.56
Coil winders, tapers, and finishers	4.1	2.6	18.55	1.9	1.2	8.76	1.0	.7	4.80	.7	.5	3.54
All other machine operators, tenders, setters, and setup operators	33.0	16.1	6.72	18.4	8.0	3.12	12.3	5.8	1.98	10.4	4.7	1.61
Electrical and electronic assemblers	42.1	27.5	18.16	19.8	13.0	8.64	11.3	8.0	4.95	8.5	5.8	3.76
Welders and cutters	30.8	22.4	10.52	19.2	14.3	5.89	14.7	12.1	4.27	13.5	10.8	3.79
All other assemblers and fabricators	98.1	61.2	9.20	53.7	32.3	4.29	34.5	23.0	2.78	28.2	18.3	2.29
Truck drivers, light and heavy	83.3	38.8	4.01	58.5	28.6	2.41	42.9	23.2	1.62	38.4	20.2	1.37
All other motor vehicle operators	8.3	7.7	19.27	5.5	5.3	20.57	4.9	5.0	17.83	4.9	4.8	17.84
Able seamen, ordinary seamen, and marine oilers	2.8	2.6	12.64	1.9	1.8	9.23	1.6	1.6	8.10	1.6	1.5	8.16
Ship engineers	1.1	1.0	16.04	.8	.7	10.33	.7	.7	9.28	.6	.6	9.52
Freight, stock, and material movers, hand	31.9	14.3	3.88	19.4	8.7	2.45	13.3	6.6	1.63	11.4	5.5	1.37
All other helpers, laborers, and material movers, hand	103.2	67.1	5.87	60.9	40.5	3.56	49.0	35.9	2.62	46.7	33.2	2.35

to prime contractors travel across State borders through subcontracting. To adapt to the current fiscal climate, employers in both the public and private sectors are streamlining operations, merging business activities, utilizing the transferable skills of an established highly trained labor force, and diversifying activities into nondefense-related commercial projects.

The aerospace industry, for example, is making a successful transition from meeting the demand of defense-dependent markets to meeting that of nondefense markets.[12] From 1986 to 1996, the industry experienced a decline of 305,000 jobs, or a 4.3-percent annual decline in employment. While employment in the defense-related segment of the aerospace industry is projected to decrease by 54,600 jobs between 1996 and 2006, overall employment in the industry is expected to grow by 46,000 jobs during the same period. The projected growth in employment is attributed to additional freight traffic and growing consumer demand for airline travel, resulting in increased orders for commercial aircraft.

Occupations

The reduction in defense expenditures is expected to have an

Table 8. Occupations most heavily dependent on defense spending, 1996

[Percent of total employment]

Occupation	Defense-related share of employment
Shipfitters	43.7
Aircraft assemblers, precision	41.4
Electronics repairers, commercial and industrial equipment	31.7
Riggers	30.0
Aeronautical and astronautical engineers	28.2
Aircraft engine specialists	26.3
All other motor vehicle operators	20.6
Aircraft mechanics	19.9
Physicists and astronomers	18.3
Nuclear engineers	18.1
Science and mathematics technicians	17.5
All other physical scientists	17.1
Budget analysts	16.9
All other social scientists	16.1
Metallurgists and metal, ceramic, and materials engineers	15.6
Purchasing agents, except wholesale, retail, and farm products	15.4
Management analysts	15.0

impact on every major occupational group. (See table 6.) The most notable decreases in employment over the 1987–2006 period are among occupational groups having the largest number of workers tied to defense spending. (See table 7.) These groups include operators, fabricators, and laborers (–551,802 jobs); administrative support, including clerical (–511,532 jobs); and precision production, craft, and repair occupations (–489,458 jobs). (See table 6.) The reductions are also changing the occupational composition of defense-related employment. By 2006, professional specialty occupations will outnumber operators, fabricators, and laborers, to become the third largest occupational group associated with defense-related employment.

Table 8 identifies the occupations most heavily dependent on defense spending in 1996, which range from positions requiring little formal education to years of graduate school. Occupations projected to experience the greatest change in employment are detailed in table 9. The occupations with the largest declines also tend to require years of specialized on-the-job training, or lower levels of formal education, or both. Due to advances in technology, changes in production meth-

Table 9. Occupations with the largest level changes in defense-related employment, 1987–1996 and projected 1996–2002, 1996–2006, and 1987–2006

[Thousands of jobs]

Occupation	1987–1996	1996–2002	1996–2006	1987–2006
All other managers and administrators	–82.0	–28.6	–36.3	–118.3
Secretaries, except legal and medical	–67.6	–20.5	–25.7	–93.3
Blue-collar worker supervisors	–51.6	–16.6	–21.1	–72.7
All other assemblers and fabricators	–44.4	–19.2	–25.5	–69.9
All other sales and related workers	–33.4	–23.8	–30.7	–64.1
All other helpers, laborers, and material movers, hand	–42.3	–11.9	–14.2	–56.5
Inspectors, testers, and graders, precision	–39.6	–12.3	–16.3	–55.9
Electrical and electronics engineers	–44.3	–8.5	–9.5	–53.8
General office clerks	–31.2	–17.6	–22.5	–53.7
Bookkeeping, accounting, and auditing clerks	–36.7	–13.3	–16.7	–53.4
Janitors and cleaners, including maids and housekeepers	–30.5	–13.9	–17.9	–48.4
All other clerical and administrative support workers	–31.3	–14.3	–17.0	–48.3
Truck drivers, light and heavy	–24.8	–15.6	–20.1	–44.9
Stock clerks	–28.1	–9.0	–10.8	–39.0
All other management support workers	–27.3	–8.8	–9.7	–37.0
All other professional workers	–29.7	–7.0	–6.9	–36.7
All other engineering technicians and technologists	–24.6	–9.6	–11.7	–36.3
Machinists	–22.8	–8.6	–11.1	–34.0
Electrical and electronic assemblers	–22.3	–8.5	–11.3	–33.6
Electrical and electronic technicians and technologists	–25.8	–6.1	–7.7	–33.5
Accountants and auditors	–21.3	–7.7	–9.0	–30.2
Typists and word processors	–19.7	–4.6	–6.1	–25.8
Aeronautical and astronautical engineers	–21.9	–2.9	–3.5	–25.4
Clerical supervisors and managers	–17.1	–6.8	–8.0	–25.1
Mechanical engineers	–18.2	–5.3	–6.5	–24.7
Drafters	–15.6	–5.9	–7.7	–23.3
Purchasing agents, except wholesale, retail, and farm products	–17.2	–5.5	–6.0	–23.3
Electrical and electronic equipment assemblers, precision	–14.4	–6.5	–8.6	–23.0

Table 9. Continued—Occupations with the largest level changes in defense-related employment, 1987–1996 and projected 1996–2002, 1996–2006, and 1987–2006

[Thousands of jobs]

Occupation	1987–1996	1996–2002	1996–2006	1987–2006
Guards	–14.5	–6.9	–8.3	–22.8
All other machine operators, tenders, setters, and setup operators	–14.6	–6.1	–8.0	–22.7
Science and mathematics technicians	–16.7	–5.3	–5.3	–22.0
Production, planning, and expediting clerks	–15.5	–4.7	–6.0	–21.5
Maintenance repairers, general utility	–12.7	–6.6	–8.2	–20.9
All other engineers	–13.2	–6.4	–7.5	–20.6
Computer programmers	–14.2	–5.2	–6.3	–20.5
Freight, stock, and material movers, hand	–12.5	–6.1	–7.9	–20.4
Salespersons, retail	–11.1	–5.3	–6.9	–18.0
Industrial machinery mechanics	–12.1	–4.6	–5.9	–17.9
Welders and cutters	–11.6	–4.5	–5.7	–17.3
Computer engineers, scientists, and systems analysts	9.9	1.1	5.9	15.8

Table 10. Occupations with the greatest amount of indirect defense-related employment in 1996

[Thousands of jobs]

Occupation	Indirect employment	Occupation	Indirect employment
All other sales and related workers	51.1	Machinists	8.3
All other managers and administrators	48.7	Computer programmers	7.9
Truck drivers, light and heavy	29.9	Receptionists and information clerks	7.8
Janitors and cleaners, including maids and housekeepers	26.9	Financial managers	7.5
General office clerks	24.2	Food counter, fountain, and related workers	7.5
Secretaries, except legal and medical	22.7	Industrial truck and tractor operators	7.0
All other assemblers and fabricators	21.4	Electrical and electronic assemblers	6.9
All other helpers, laborers, and material movers, hand	20.4	Industrial machinery mechanics	6.8
Blue-collar worker supervisors	20.0	All other professional workers	6.7
All other clerical and administrative support workers	18.6	All other service workers	6.5
Bookkeeping, accounting, and auditing clerks	17.5	Printing, binding, and related workers	6.5
Guards	14.4	Electrical and electronics engineers	6.4
Accountants and auditors	12.4	All other handworkers	6.0
Computer engineers, scientists, and systems analysts	12.1	Marketing, advertising, and public relations managers	5.8
Salespersons, retail	12.1	All other engineering technicians and technologists	5.8
Maintenance repairers, general utility	11.7	Typists and word processors	5.8
Inspectors, testers, and graders, precision	11.7	All other machine tool cutters and formers	5.6
Cashiers	11.5	All other agricultural, forestry, fishery, and related workers	5.5
Hand packers and packagers	11.4	Data entry keyers, except composing	5.4
Clerical supervisors and managers	11.3	Electrical and electronic technicians and technologists	5.2
Stock clerks	11.1	Drafters	5.1
Freight, stock, and material movers, hand	10.7	Electrical and electronic equipment assemblers, precision	5.0
All other machinery operators, tenders, setters, and setup operators	10.4	Teachers, preschool through college, except special and adult education	4.9
All other management support workers	9.8	Welders and cutters	4.9
Waiters and waitresses	9.7	All other engineers	4.7

ods, and an overall decline in manufacturing employment, operators, fabricators, and laborers and precision production, craft, and repair occupations are projected to generate only slow growth in employment over the 1996–2006 projection period.[13] Consequently, workers displaced from defense-related jobs may have difficulty finding alternative nondefense employment. Some firms that diversify their core businesses into nondefense-related enterprises, however, may offer displaced workers employment-counseling services and opportunities to acquire additional education or retraining.

Defense-related employment has long been an integral part of many communities. Spending on defense creates a wide variety of employment opportunities for unskilled workers as well as Ph.D.'s across a broad range of business establishments. Therefore, the impact of decreased defense dollars will continue to be felt across occupations indirectly related to de-

fense spending. Table 10 shows occupations with the largest amount of indirect defense-related employment in 1996. Many of these occupations—all other managers and administrators, all other sales and related workers, truckdrivers, janitors, secretaries, and retail salespersons—also are among the occupations listed in table 9 with the largest changes in defense-related employment.There are few occupations completely immune to the economic impact of declining defense dollars.

IN SUMMARY, THE DECADE-LONG CONTRACTION in defense-related expenditures and employment is projected to continue, at a slower rate, through 2006. Almost three-quarters of the expected reductions in defense-related employment between 1987 and 2006 have transpired. The reductions are projected to have an impact on employment across a myriad of industries and occupations directly and indirectly related to defense. Such industries and occupations range from weapon design, development, and production to those supplying support, technical expertise, and transportation services to the Government and private firms. The fierce competition for limited defense dollars, particularly among industries with significant concentrations of defense employment, is likely to remain throughout the projected period. To stay competitive, many firms will continue to redesign their operations and products, and enter nondefense markets. Over the next decade, the repercussions of fewer defense dollars, while still substantial, show signs of easing, as industries adjust and worker retraining initiatives are implemented. □

Footnotes

[1] All data for this article are on a calendar-year basis.

[2] This article is part of a continuing series from the Bureau of Labor Statistics, Office of Employment Projections: *U.S. Defense Related Employment Retrenches, Issues in Labor Statistics*, May 1995; and Norman Saunders, "Employment effects of the rise and fall of defense spending," *Monthly Labor Review*, April 1993, pp. 3–10.

[3] Employment generated by defense spending can be divided into two categories—direct and indirect. Nearly all industries have some combination of direct and indirect defense-related employment. Direct defense-related employment evolves from the Defense Department's spending on all final goods and services. Indirect defense-related employment arises from the need to supply inputs to the producers of these final goods and services.

[4] These estimates were derived from the 1996–2006 BLS projections in *Monthly Labor Review*, November 1997, various articles.

[5] *Ibid.* Also, see first paragraph of the appendix.

[6] A decline in job requirements does not necessarily result in fewer jobs in the economy or a rise in unemployment; other factors of demand, such as exports, investment, and personal consumption, could offset this decline.

[7] These estimates were derived from the 1996–2006 BLS projections in *Monthly Labor Review*, November 1997, various articles.

[8] The income multiplier effect—changes in defense spending directly and indirectly—has an impact on defense-related employment. These changes in defense-related employment produce shifts in consumption and investment patterns, which may alter employment in industries unrelated to defense spending. These tertiary affects are referred to as income effects and are *not* estimated in this study. Similarly, the effects from the lost reinvestment of profits and the decreased investment requirements resulting from reduced production needs are not examined.

[9] *Paying for Military Readiness and Upkeep: Trends in Operation and Maintenance Spending* (Washington, Congressional Budget Office, September 1997).

[10] Additional information regarding Base Realignment and Closures is found in William S. Cohen, *Report of the Quadrennial Defense Review* (Department of Defense, May 1997); William S. Cohen, *Defense Reform Initiative Report* (Department of Defense, November 1997); and *Transforming Defense: National Security in the 21st Century* (Report of the National Defense Panel, December 1997).

[11] *The Costs and Benefits of Retail Activities at Military Bases* (Washington, Congressional Budget Office, October 1997).

[12] For additional information on defense-dependent industries, including aerospace, see Ron Hetrick, "Employment in high-tech defense industries in a post cold war era," *Monthly Labor Review*, August 1996, pp. 57–63.

[13] Additional detail of the Bureau of Labor Statistics Employment Projections 1996–2006 can be found on the Bureau's Web Page, http//: stats.bls.gov and in the *Monthly Labor Review*, November 1997. Also, see *BLS Releases New 1996–2006 Employment Projections* (Bureau of Labor Statistics, Dec. 3, 1997).

Appendix: Data Sources and Methodology

Defense spending and defense-related employment are derived using the Department of Defense proposed budget outlays, the Bureau of Economic Analysis National Income and Product Accounts data, and BLS input-output tables. Historical data on Government expenditures are published annually in *The Survey of Current Business* (tables 3.7b, 3.8b, 3.10 and 3.11). Expenditures are separated into three groups—Federal Government defense, Federal Government nondefense, and State and local government. Additional levels of detail are provided for each of the three categories. Projected outlays through 2002 are published in the Department of Defense's *National Defense Budget Estimates for FY 1998*. The projected expenditure data are converted to National Income and Product Accounts concepts by applying the average ratio between National Income and Product Accounts and Defense Department series computed over the past 10 years. The current National Income and Product Accounts data are then deflated with the projected defense spending deflators, derived from the implicit price deflators projections section of the Data Resources, Inc., *Comprehensive Quarterly Model of the U.S. Economy.*

The input-output table and associated requirements tables are part of the data system used by the Bureau of Labor Statistics to prepare its regular biannual projections of the U.S. economy at an industry level of detail. The input-output table is published every 5 years and consists of two tables—the "make" and the "use tables." The make table indicates the commodities an industry makes, including primary and secondary products, while the use table indicates the inputs used by an industry in producing those commodities. The use table also offers information regarding the technology

used in production, purchases of commodities by end users, and the value added to production in each industry. The use table acts as a bridge between the National Income and Product Accounts data on Government defense expenditures and the industries producing these goods and services.

A "total requirements" table is derived from the make and use tables to convert the production concepts in the input-output table to employment. The total requirements table indicates the total production required to support $1 of final demand. It includes both the direct and indirect input requirements to production. The total requirements table is scaled to the employment-output ratio for each industry, thus converting the production required per dollar of demand to the employment required per dollar of demand. The end result is the employment requirements table. The employment requirements table shows how the interrelationships between various industries affect employment. For example, defense spending generates employment in the aerospace industry, which generates employment in the electronic components and accessories industry and the communication equipment industry. Employment is indirectly affected in the retail trade industry, and the hotels and other lodging industry, because communities develop around manufacturing sites and travelers seek overnight accommodations to conduct business. This analysis does not examine job creation or reduction associated with the income multiplier effect of defense spending.

Industry employment is translated to occupational employment, using the industry-occupation matrix. The matrix details the occupational content of each industry and is projected to 2006 as part of the BLS ongoing projections program. Defense-related industry employment is multiplied by these staffing patterns to generate the occupational employment statistics related to defense spending.

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Persons outside the labor force who want a job

Persons enter or leave the labor force in response to a myriad of changing personal or economic conditions; their decisions often do not seem to be closely linked to their stated desire or availability for work a year earlier

Monica D. Castillo

Although labor economists tend to focus on the activities and characteristics of persons in the labor force, there has been continued, if somewhat less visible, interest in the possible links to the job market of persons outside the labor force who want work but are not currently seeking a job. Data from the Current Population Survey (CPS) show that an average of 4.9 million nonparticipants reported that they wanted a job in 1997, representing about 7.4 percent of all persons outside the labor force. Persons making up this group—particularly "discouraged workers"—are of interest to labor market analysts and policymakers because they, like the unemployed, represent unused human resources in our economy. Moreover, information on the size, profile, and extent of subsequent labor force attachment of these nonparticipants who want a job is important to understand the nature of the total labor supply and to provide a complete measure of the slack or tightness of the labor market.

This article discusses the development of not-in-the-labor-force concepts used in the CPS, illustrating how the definitions have changed over time to reflect evolving notions about persons outside the labor force and their relationship to the labor force. Using classifications of nonparticipants based on definitions that were implemented as part of the 1994 redesign of the CPS, this article also examines the extent to which persons who had been outside the labor force and indicated that they wanted a job in 1994 became attached to the labor force a year later. The new measures were developed to more accurately and objectively identify those persons who might be considered to be most closely linked to the labor force as determined by factors such as their desire to work, availability for work, and recent job search activity. In addition, the analysis takes a look at whether specific groups of nonparticipants—particularly those defined as "discouraged workers"—in fact show a greater attachment to the labor force than had been shown under the prior definitions. Also considered is the degree to which subsequent labor force participation differs among the various subcategories of persons outside the labor force who said they wanted to work, and how the experience of such persons compares with that of persons who had been unemployed. In the concluding sections of the article, the influence of certain demographic, work history, and intention-to-work characteristics is studied to determine the extent to which these factors are predictors of subsequent labor market activity.

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Not-in-the-labor-force concepts

Labor economists first became interested in persons outside the labor force who wanted a job as a potential source of labor in the post-World War II period.[1] During the Great Depression, the economy had included a vast number of unemployed with few prospects of finding work. Among the new post-war realities, revealed by new data on the labor force, was the fact that millions of people moved into and out of the la-

bor force each year not only for personal reasons but because of changes in labor demand.

The first concepts and definitions to account for those persons outside the labor force who wanted a job were incorporated into the CPS in January 1967. These measures were introduced as a result of recommendations by the President's Committee to Appraise Employment and Unemployment Statistics (more commonly known as the Gordon Committee), which, in 1962, recognized the need to collect more detailed information in the CPS on so-called "discouraged workers"—that is, persons outside the labor force who were not currently looking for a job because they believed their job search would be in vain. Some analysts referred to such persons as the "hidden unemployed."

Data on such workers, based on a consistent set of definitions, were collected in the CPS from 1967 through 1993.[2] Persons who were not in the labor force—that is, who were not working at all during the survey reference week and who had not looked for work during the prior 4-week period—were asked if they wanted a job "now," either full or part time. Those with an affirmative answer were asked the reason they were not seeking a job. Persons classified as "discouraged workers" were those who responded that they did not think they could find a job, either for a *job market*-related reason, such as their belief that work was not available or that they could not find any work, or for certain *personal* reasons, such as a perception that they were too young or too old, that they lacked education or training, or that they had some other personal handicap.[3]

Criticisms of the definition of discouraged workers later surfaced, however, particularly during the 1970s. In 1979, the National Commission on Employment and Unemployment Statistics (also known as the Levitan Commission) formalized these criticisms, noting that the definition of discouraged workers was (1) too subjective, because the measure was based primarily on a stated "desire" for a job, without specifying the terms and conditions of work,[4] and (2) too arbitrary, because availability to take a job was inferred from responses to the question on reasons for not currently looking for a job rather than determined directly.[5]

The Levitan Commission recommended using a new measurement that would be based on clear evidence of prior job search and current desire and availability for a job. Their recommendation was accepted by the Secretary of Labor 2 years later[6] but could not be implemented at that time because there was no funding to test the impact of a changed definition and survey questions on other measures, such as the overall unemployment rate. An opportunity for testing arose in the late 1980s as the Bureau of Labor Statistics, in collaboration with the Bureau of the Census, began a major program to modernize the CPS. An entirely new questionnaire was developed and tested, including a new series of questions on the characteristics of persons not in the labor force.

Thus, the new definition of discouraged workers incorporated two changes. First, a question to determine whether a person had searched for a job within the prior 12 months was added. Second, a direct question on availability to take a job was added that replaced the inferred measure of availability used with the former definition. Under the new question design, individuals who are not searching for work but who want a job and are available for work are asked the *main* reason why they are not looking for work. (In the former scheme, individuals could provide any number of reasons for not seeking work. A "nondiscouraged" reason took precedence over a "discouraged" reason in the classification scheme.)

An additional not-in-the-labor-force concept was created as part of the design of the new questions. It relates to persons who are "marginally attached" to the labor force. This is a broader concept than "discouraged workers" in that it includes the requirements for job desire, availability, and job search in the past year, but places no restrictions on the reasons for not looking for work. Thus, persons who meet these conditions and cite family responsibilities or transportation problems as reasons for not conducting a job search, for example, would be included among the marginally attached.

The newly defined discouraged workers are a subset of the marginally attached group. Along with the additional job search and availability requirements, the new definition of discouraged workers maintains the same reasons for not conducting a job search as provided under the former definition, namely, that such persons believe no jobs are available for them or that there are none for which they could qualify. More specifically, such persons respond that they are not currently looking for work for one of the following reasons: they believe there are no jobs available for them; they could not find work; they lack necessary schooling, skills, or experience; or they perceive some type of discrimination in the workplace. With the implementation of the additional job search and availability requirements in 1994, the number of discouraged workers fell by roughly half.

Within the marginally attached group, persons who give reasons other than discouragement for not conducting a job search—referred to as "other marginally attached" persons—constitute almost three-fourths of the total group. Their reasons for not looking for a job include child care problems, family responsibilities, going to school or training, ill health or disability, transportation problems, or other reasons.

Past studies and theoretical concepts

Past studies of persons not in the labor force had focused on a group referred to as the "hidden unemployed." This group was generally defined by researchers as those persons who would like to work but are too discouraged over employment

prospects to search for a job.[7] It was assumed that many of these hidden unemployed would be labor force participants in a "full employment" economy, and thus represent a component of the current supply of labor. Other economists had expanded the concept of "hidden unemployed" to include not only discouraged workers but also certain visibly underemployed persons—specifically those who are working part time but would prefer full-time work.[8]

These studies of the hidden unemployed focused on estimating their numbers and composition, as well as examining the cyclical sensitivity of officially measured discouraged workers over the course of the business cycle.[9] The findings showed clearly that the number of discouraged workers is quite sensitive to changes in labor demand, declining when the economy expands and unemployment falls.

While hidden unemployment is a concept that relates to the current supply of available labor, another concept, the "labor reserve," is somewhat broader and refers to the potential supply of labor.[10] It encompasses those nonparticipants who are most likely to join the labor force in the future under more favorable economic and social conditions. Members of the labor reserve may briefly test the labor market or begin a job search when the economy improves. Moreover, inherent in the concept of a labor reserve is the notion that personal attitudes and preferences may be as important a factor to potential labor force participation as low unemployment and high wages. In theory, the labor reserve could include anyone outside the labor force who would enter under the right conditions, although some researchers have postulated that it consists primarily of those outside the labor force who say they want jobs, with discouraged workers and persons with recent work experience forming its core.

Given these conceptual distinctions between the hidden unemployed and the labor reserve, one might expect that, all else equal, labor force attachment among various groups classified as not in the labor force but wanting a job would differ substantially. Specifically, discouraged workers might be expected to have a stronger labor force attachment than other nonparticipants who want a job. Yet, evidence presented to the Levitan Commission in 1979 indicated that discouraged workers did not have a distinctive labor force attachment.[11] The links of the discouraged (as formerly defined) to the labor market were weaker than might have been expected.

Objective of this study

The analysis in this study focuses primarily on the labor force status of persons in 1995 who, as of a year earlier, had been classified as outside the labor force but had indicated they wanted a job. Questions to be addressed include whether the newly defined discouraged workers show a stronger attachment to the labor force than other not-in-the-labor-force groups or than discouraged workers as classified under the former definition. Comparisons of subsequent labor force activity also are made between those not in the labor force who want a job as well as the discouraged and persons who had been unemployed in 1994. The comparison between the discouraged and the unemployed may indicate whether future links to the job market among the so-called "hidden unemployed" were as strong as those for persons officially classified as unemployed.

The structure of the CPS allows for this type of longitudinal analysis. Sample households are tracked in the same 4 months for 2 consecutive years.[12] For this reason, it is possible to match year-apart reports from respondents. For this analysis, reports on individuals outside the labor force in 1994 who had indicated that they wanted a job were matched with the reported labor force status of the same persons a year later.[13] That is, cases for each month in sample were matched to the same consecutive months a year later.

The maximum number of potentially matchable households is half the full sample. However, the sample universe for *this* study, based on actual matches, was substantially less than the potential universe. Some respondents did not provide data a year later because they could not be contacted (they might have moved) or because they did not respond at all to the survey or to the key survey questions on labor force classification. In addition, because the CPS sample was in the midst of its decennial sample redesign, some households that normally would have been in scope were no longer in the sample.[14] For these reasons, the distributions shown in the tables are based on the weighted number of respondents who actually provided data.

Characteristics of the target group

Before examining the subsequent labor force attachment of persons outside the labor force in 1994 who said they wanted a job, it is useful to understand the size and demographic characteristics of this group. In 1994, just under 10 percent of the total number of persons classified as not in the labor force indicated they wanted a job. Of the 6.2 million persons who indicated they wanted a job in that year, only 1.8 million were classified as marginally attached to the labor force.[15] About 500,000 of this total were not currently looking for work because of discouragement over job prospects. Compared to the number of persons officially classified as unemployed—8.0 million in 1994—the so-called "hidden unemployed," at least as measured through the new discouraged worker concept, were a relatively small group.

As compared with their numbers in the population, blacks and youth were highly overrepresented in the three nonparticipant groups, that is, those who wanted a job, the marginally attached, and discouraged workers. Men were more likely

to be classified as discouraged workers than were women, but were slightly less likely than women to be classified in the other two nonparticipant groups.

Labor market attachment

Analysis of the current data shows that, as in past studies, persons who were not in the labor force but wanted a job in 1994 did not have a strong attachment to the labor force a year later. Indeed, only 41 percent of nonparticipants who said they wanted a job in 1994 were in the labor force in 1995. (See table 1.) Moreover, a large majority of those who remained out of the labor force a year later indicated that they no longer wanted a job. Such persons might have decided to take on a full-time commitment such as school or child care responsibilities, or perhaps have retired.

Of those who said they wanted a job, persons who were classified as marginally attached to the labor force (that is, they had searched for work in the prior year and were available to take a job but were not currently looking for work) had a slightly stronger link to the job market than the overall want-a-job group. Even among the marginally attached, however, only 48 percent were in the labor force a year later. Discouraged workers—the group who might be expected to show future labor market activity—experienced slightly lower labor force attachment (45 percent in the labor force in 1995) than other marginally attached workers (49 percent).

These low rates of labor force attachment for discouraged workers might be interpreted several ways: that respondents overstate their desire for work as a "socially acceptable" response, or that the barriers to employment for these persons (perceived and real) are so great as to leave many discouraged for an extended period. Perhaps it is reasonable that the "nondiscouraged" reasons for not looking for work, such as transportation problems, school attendance, and child care problems, are somewhat less intractable than are the reasons that make the discouraged feel "unemployable."

As anticipated, labor force attachment among discouraged workers, although weak, was somewhat stronger than it had been in the past under the old definition. However, comparisons with past studies are problematic because of definitional and methodological differences, and, given the cyclical sensitivity of the number of discouraged workers, different periods of study within the business cycle. For example, two earlier studies that examined subsequent attachment to the labor force among discouraged workers analyzed data for periods relatively early during economic recovery cycles (1976–77 and 1982–83).[16] On the other hand, this study looks at the years 1994–95, a few years after the most recent recession officially ended.

The data for 1995 show a substantial difference in the subsequent employment experience of nonparticipants who said they wanted a job, as compared with persons who were officially classified as unemployed. While 53 percent of the unemployed were working a year later, less than a third of the nonparticipants who had wanted a job managed to find one. Moreover, nearly 1 in 5 unemployed was still searching for a job, compared with only 1 in 10 nonparticipants who had expressed a desire to work. Discouraged workers, while showing a somewhat higher subsequent labor force participation than the total want-a-job group, nonetheless had nowhere near the strength of attachment demonstrated by the unemployed. In 1995, 45 percent of persons classified as discouraged workers in 1994 were in the labor force, compared with 72 percent of persons classified as unemployed in the prior year. Such substantial differences suggest that merely indicating a desire to work is not nearly as good a predictor of subsequent labor force activity—particularly employment activity—as actively searching for a job.

Attachment by demographic group

Men who reported that they wanted a job had a stronger subsequent labor force attachment than did their female counterparts. (See table 1.) Differences were particularly evident between discouraged men and women; their labor force participation rates were 49 and 38 percent, respectively, a year later. Discouraged men were almost twice as likely as women to be unemployed a year later, yet men and women were about equally likely to be employed a year later.

Whites in each of the nonparticipant groups were slightly more likely than their black counterparts to have entered the labor force a year later. Consistent with their overall patterns of labor market success, whites in these groups had a greater likelihood of being employed in a year's time, while blacks generally were more likely to be looking for work a year later. The greatest difference in subsequent labor force attachment by race was found among discouraged workers; 47 percent of whites were in the labor force a year later, compared with 39 percent of blacks. Because reasons for discouragement include the perception of employer discrimination, this may be a factor in weakening blacks' links to the labor market vis-à-vis those of whites.

Among persons classified as not in the labor force who wanted a job, about half of all young persons (aged 16 to 24 years) showed some labor force activity a year later, while persons aged 55 and older were least likely to have entered the job market. (See table 2.) Most of these older persons who remained outside the labor force a year later reported they were no longer even interested in finding a job. The differences by age may reflect the greater willingness on the part of youth to accept more readily available low-wage employment, given their lower skill levels and relative lack of experience with the job market.

Table 1. Persons not in the labor force who wanted a job and unemployed persons in 1994 by their labor force status in 1995, by sex, and race

Status in 1994, by sex and race	Total (thousands)	Percent	Status in 1995									
			In the labor force			Not in the labor force						
							Wanted a job					
								Searched and was available for work			Did not search for work or was not available	Did not want a job
									Reason for not looking for work:			
			Total	Employed	Unemployed	Total	Total	Total	Discouraged over job prospects	Other reasons		
Total												
Not in the labor force, wanted a job	3,934	100.0	41.3	30.8	10.5	58.6	16.5	5.2	1.6	3.6	11.3	42.2
Searched and was available for work	1,106	100.0	47.5	30.8	16.7	52.5	17.9	9.3	2.9	6.4	8.5	34.6
Reason not looking for work:												
Discouraged over job prospects	300	100.0	44.7	27.4	17.3	55.4	19.1	11.6	7.4	4.2	7.5	36.2
Other reasons	807	100.0	48.6	32.1	16.5	51.4	17.4	8.5	1.2	7.3	8.9	34.0
Did not search for work and was not available	2,828	100.0	38.9	30.8	8.1	61.0	15.9	3.6	1.0	2.5	12.3	45.1
Unemployed	4,660	100.0	72.5	53.1	19.4	27.6	8.6	4.1	1.3	2.8	4.5	18.9
Men												
Not in the labor force, wanted a job	1,556	100.0	45.2	32.2	13.0	54.8	16.9	6.3	2.3	4.0	10.6	37.9
Searched and was available for work	521	100.0	51.0	31.5	19.5	49.1	18.2	10.5	3.7	6.9	7.7	30.9
Reason not looking for work:												
Discouraged over job prospects	180	100.0	48.9	27.8	21.1	51.0	18.8	12.3	8.3	4.0	6.6	32.2
Other reasons	341	100.0	52.0	33.4	18.6	48.0	17.8	9.6	1.2	8.4	8.2	30.2
Did not search for work and was not available	1,035	100.0	42.5	32.6	9.9	57.6	16.2	4.2	1.5	2.5	12.2	41.4
Unemployed	2,488	100.0	78.0	55.4	22.6	22.0	7.9	4.0	1.6	2.4	3.9	14.1
Women												
Not in the labor force, wanted a job	2,378	100.0	38.8	29.9	8.9	61.2	16.2	4.5	1.1	3.4	11.7	45.0
Searched and was available for work	585	100.0	44.5	30.2	14.3	55.5	17.6	8.2	2.2	6.1	9.3	37.9
Reason not looking for work:												
Discouraged over job prospects	120	100.0	38.0	26.6	11.4	61.9	19.6	10.6	6.1	4.6	9.0	42.3
Other reasons	465	100.0	46.2	31.2	15.0	53.8	17.1	7.6	1.2	6.5	9.5	36.8
Did not search for work and was not available	1,793	100.0	36.9	29.8	7.1	63.0	15.7	3.3	.7	2.5	12.4	47.3
Unemployed	2,172	100.0	66.1	50.4	15.7	33.9	9.4	4.2	.9	3.3	5.2	24.5
White												
Not in the labor force, wanted a job	2,859	100.0	42.2	32.6	9.6	57.8	15.2	4.5	1.3	3.2	10.7	42.6
Searched and was available for work	774	100.0	47.9	32.1	15.8	52.1	17.4	8.9	2.3	6.5	8.5	34.7
Reason not looking for work:												
Discouraged over job prospects	202	100.0	46.6	28.8	17.8	53.4	17.7	10.7	6.3	4.4	7.0	35.7
Other reasons	571	100.0	48.4	33.3	15.1	51.6	17.2	8.2	.9	7.3	9.0	34.3
Did not search for work and was not available	2,085	100.0	40.0	32.7	7.3	60.0	14.4	2.9	.9	2.0	11.6	45.6
Unemployed	3,490	100.0	74.3	56.1	18.2	25.7	7.8	3.6	1.0	2.6	4.1	17.9
Black												
Not in the labor force, wanted a job	851	100.0	38.0	24.6	13.4	62.0	20.4	7.7	2.6	5.0	12.8	41.6
Searched and was available for work	277	100.0	45.6	26.5	19.1	54.4	19.8	10.5	4.4	6.1	9.2	34.6
Reason not looking for work:												
Discouraged over job prospects	82	100.0	38.7	23.1	15.6	61.3	23.9	14.8	11.1	3.8	9.1	37.4
Other reasons	195	100.0	48.5	27.9	20.6	51.5	18.1	8.7	1.6	7.1	9.4	33.5
Did not search for work and was not available	574	100.0	34.3	23.7	10.6	65.7	20.7	6.3	1.7	4.5	14.6	44.9
Unemployed	931	100.0	65.4	41.7	23.7	34.6	11.8	5.9	2.2	3.7	5.9	22.8

NOTE: Data are derived from the Current Population Survey and represent weighted averages of matched sample households that were in the survey in both 1994 and 1995. Thus, these data differ from the official published averages for 1994 and 1995, which are based on the full sample of households. Detail may not sum to totals due to rounding.

Table 2. Persons not in the labor force who wanted a job and unemployed persons in 1994 by their labor force status in 1995, by age, and sex

Status in 1994, by sex and race	Total (thousands)	Percent	Status in 1985									
			In the labor force			Not in the labor force						
							Wanted a job					
								Searched and was available for work			Did not search for work or was not available	Did not want a job
									Reason for not looking for work:			
			Total	Employed	Unemployed	Total	Total	Total	Discouraged over job prospects	Other reasons		
Not in labor force, wanted a job												
Total, 16 years and older	3,934	100.0	41.3	30.8	10.5	58.6	16.5	5.2	1.6	3.6	11.3	42.2
16 to 24 years	1,276	100.0	50.1	38.5	11.6	49.9	16.4	4.6	.9	3.7	11.8	33.6
25 to 54 years	1,842	100.0	45.7	33.3	12.4	54.3	16.6	5.9	1.9	4.0	10.7	37.7
55 years and older	816	100.0	18.0	13.3	4.7	82.0	16.3	4.6	1.9	2.7	11.7	65.7
Men, 16 years and older	1,556	100.0	45.2	32.2	13.0	54.8	16.9	6.3	2.3	4.0	10.6	37.9
16 to 24 years	632	100.0	52.0	39.0	13.0	48.0	18.1	5.3	1.1	4.2	12.9	29.9
25 to 54 years	542	100.0	54.8	36.9	17.9	45.2	16.0	8.2	3.8	4.4	7.8	29.1
55 years and older	381	100.0	20.4	14.3	6.1	79.6	16.0	5.1	2.1	3.1	10.9	63.5
Women, 16 years and older	2,378	100.0	38.8	29.9	8.9	61.2	16.2	4.5	1.1	3.4	11.7	45.0
16 to 24 years	644	100.0	48.2	38.0	10.2	51.8	14.7	3.9	.8	3.1	10.7	37.2
25 to 54 years	1,299	100.0	41.8	31.8	10.0	58.1	16.8	4.9	1.0	3.9	11.9	41.3
55 years and older	434	100.0	15.8	12.4	3.4	84.2	16.6	4.2	1.7	2.4	12.5	67.6
Searched and was available for work												
Total, 16 years and older	1,106	100.0	47.5	30.8	16.7	52.5	17.9	9.3	2.9	6.4	8.5	34.6
16 to 24 years	356	100.0	52.5	35.3	17.2	47.5	16.3	7.8	1.5	6.3	8.5	31.2
25 to 54 years	570	100.0	50.7	32.0	18.7	49.4	17.7	9.5	3.0	6.5	8.2	31.7
55 years and older	180	100.0	27.9	18.3	9.6	72.1	21.6	11.8	5.2	6.6	9.8	50.5
Men, 16 years and older	521	100.0	51.0	31.5	19.5	49.1	18.2	10.5	3.7	6.9	7.7	30.9
16 to 24 years	194	100.0	54.3	35.6	18.7	45.7	18.7	9.3	1.7	7.6	9.4	27.0
25 to 54 years	222	100.0	57.2	33.9	23.3	42.8	16.7	11.1	5.4	5.6	5.7	26.1
55 years and older	105	100.0	31.6	18.7	12.9	68.5	20.3	11.5	3.5	8.0	8.9	48.2
Women, 16 years and older	585	100.0	44.5	30.2	14.3	55.5	17.6	8.2	2.2	6.1	9.3	37.9
16 to 24 years	162	100.0	50.4	34.9	15.5	49.6	13.4	6.0	1.4	4.6	7.4	36.2
25 to 54 years	348	100.0	46.5	30.8	15.7	53.5	18.3	8.4	1.4	7.1	9.9	35.3
55 years and older	75	100.0	22.8	17.8	5.0	77.2	23.4	12.3	7.6	4.7	11.2	53.8
Unemployed												
Total, 16 years and older	4,660	100.0	72.5	53.1	19.4	27.6	8.6	4.1	1.3	2.8	4.5	18.9
16 to 24 years	1,432	100.0	70.7	52.5	18.2	29.3	8.7	3.6	.9	2.7	5.1	20.6
25 to 54 years	2,772	100.0	76.3	56.0	20.3	23.6	8.0	4.1	1.3	2.8	4.0	15.6
55 years and older	455	100.0	54.1	36.8	17.3	45.9	12.0	6.0	2.5	3.5	6.0	33.9
Men, 16 years and older	2,488	100.0	78.0	55.4	22.6	22.0	7.9	4.0	1.6	2.4	3.9	14.1
16 to 24 years	816	100.0	74.9	54.0	20.9	25.1	8.5	3.9	1.2	2.7	4.6	16.6
25 to 54 years	1,419	100.0	83.7	59.8	23.9	16.3	6.8	3.7	1.6	2.1	3.1	9.5
55 years and older	253	100.0	55.9	35.3	20.6	44.1	12.4	6.3	2.7	3.6	6.0	31.7
Women, 16 years and older	2,172	100.0	66.1	50.4	15.7	33.9	9.4	4.2	.9	3.3	5.2	24.5
16 to 24 years	616	100.0	65.2	50.5	14.7	34.8	9.0	3.2	.5	2.7	5.8	25.9
25 to 54 years	1,353	100.0	68.6	52.1	16.5	31.3	9.3	4.4	.9	3.6	4.9	22.0
55 years and older	202	100.0	51.9	38.8	13.1	48.1	11.6	5.7	2.2	3.4	5.9	36.5

NOTE: Data are derived from the Current Population Survey and represent weighted averages of matched sample households that were in the survey in both 1994 and 1995. Thus, these data differ from the official published averages for 1994 and 1995, which are based on the full sample of households. Detail may not sum to totals due to rounding.

Reason for not looking for work

The slightly lower subsequent attachment observed among discouraged persons relative to other marginally attached persons reflected different patterns in subsequent employment and unemployment. Nearly a third of other marginally attached persons had become employed a year later, whereas only 27 percent of discouraged workers had done so. Nonetheless, both types of marginally attached workers were equally likely to be looking for work in a year's time.

Among discouraged workers, those who were no longer looking because of factors most allied with the jobseeking process—that is, they had stopped looking for work because they could not find work, believed no work was available for them, or lacked schooling or training—had the greatest attachment to the labor force a year later. Those who cited discrimination—both age and other types of discrimination—were least likely to be labor force participants. These findings suggest that persons who are discouraged due to concrete labor market difficulties (shortage of work or mismatch of skills

Table 3. Persons not in the labor force who wanted a job and unemployed jobseekers in 1994 by their recent work experience, jobsearch intentions, and labor force status in 1995

Status in 1994, by sex and race	Total (thousands)	Percent	Status in 1995									
			In the labor force			Not in the labor force						
							Wanted a job				Did not search for work or was not available	Did not want a job
								Searched and was available for work				
									Reason for not looking for work:			
			Total	Employed	Unemployed	Total	Total	Total	Discouraged over job prospects	Other reasons		
Last worked less than 12 months ago												
Not in labor force, wanted a job	1,135	100.0	60.8	47.6	13.2	39.2	15.4	4.3	0.6	3.6	11.2	23.8
Searched and was available for work	297	100.0	60.6	42.5	18.1	39.5	13.8	5.8	.6	5.2	8.0	25.6
Reason for not looking for work:												
Discouraged over job prospects	68	100.0	58.1	37.3	20.8	41.9	7.9	3.1	2.7	.4	4.7	34.1
Other reasons	229	100.0	61.2	44.0	17.2	38.7	15.6	6.6	–	6.6	9.0	23.1
Unemployed jobseekers	2,494	100.0	77.8	62.5	15.3	22.2	7.4	3.3	.8	2.5	4.1	14.8
Did not work less than 12 months ago												
Not in labor force, wanted a job	1,976	100.0	38.4	26.3	12.1	61.6	17.6	5.8	1.7	4.1	11.8	44.0
Searched and was available for work	682	100.0	44.8	25.8	19.0	55.2	19.3	11.3	3.8	7.4	8.0	35.9
Reason for not looking for work:												
Discouraged over job prospects	196	100.0	39.8	20.4	19.4	60.2	22.4	15.1	9.5	5.6	7.4	37.8
Other reasons	486	100.0	46.8	28.0	18.8	53.1	18.0	9.7	1.5	8.2	8.2	35.2
Unemployed jobseekers	1,505	100.0	64.5	40.5	24.0	35.5	12.2	5.6	2.1	3.5	6.6	23.3
Intended to seek work												
Not in labor force, wanted a job	2,637	100.0	48.7	35.4	13.3	51.3	16.8	5.7	1.5	4.1	11.2	34.6
Searched and was available for work	914	100.0	49.9	30.9	19.0	50.1	18.3	9.9	3.1	6.9	8.3	31.8
Reason for not looking for work:												
Discouraged over job prospects	242	100.0	46.2	26.5	19.7	53.8	18.4	12.1	8.5	3.7	6.3	35.4
Other reasons	671	100.0	51.3	32.5	18.8	48.8	18.2	9.1	1.1	8.0	9.1	30.6
Did not intend to seek work												
Not in labor force, wanted a job	473	100.0	34.6	26.8	7.8	65.4	17.0	2.8	–	2.8	14.2	48.4
Searched and was available for work	66	100.0	45.5	31.1	14.4	54.6	8.6	4.9	–	4.9	3.7	46.0
Reason for not looking for work:												
Discouraged over job prospects	22	100.0	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
Other reasons	43	100.0	55.4	44.0	11.4	44.6	2.0	2.0	–	2.0	–	42.6

[1]Data not shown where base is less than 35,000.

NOTE: Data are derived from the Current Population Survey and represent weighted averages of matched sample households that were in the survey in both 1994 and 1995. Thus, these data differ from the official published averages for 1994 and 1995, which are based on the full sample of households. Detail may not sum to totals due to rounding. Dash represents zero.

demanded in the workplace) have stronger ties to the labor force than those who perceive discrimination to be a barrier to entering the labor market.

Turning to the other marginally attached group, most of the subcategories showed a relatively higher proportion employed a year later, as compared with discouraged workers. As might be expected, persons who had been in school or training were more likely to be employed (37 percent), while those with child care problems were less likely to be working in a year's time (21 percent). Nonetheless, persons with child care difficulties were most likely to be searching for a job the following year, indicating that they might have a more difficult time finding a job that suits their schedules than other persons in the other marginally attached group.

Other factors

One might expect that the recency of a person's work experience and his or her intentions to seek work would be important factors in subsequent attachment to the labor force.[17] As might be expected, nonparticipants who had expressed some desire for a job and had recent work experience in the first survey year were more likely to be labor force participants 1 year later than were those who had more remote or no work experience. Moreover, those having recent work experience proved to have stronger ties to the labor force than those who merely expressed their intention to seek work in the future.

Unemployed jobseekers with recent work experience predictably revealed the strongest attachment to the labor force—78 percent continued to be labor force participants a year later. Even unemployed jobseekers with more remote or no work history showed a relatively strong attachment to the labor force. True to their word, persons not in the labor force who indicated they wanted a job, yet had no intention of looking for work, showed relatively weak attachment to the labor force.

IN ADDITION TO REDUCING THE NUMBER of discouraged workers by half, the new measure of such workers, introduced in 1994, had the anticipated effect of showing somewhat stronger ties to the labor force than had been demonstrated under the old definition (although the comparisons in this article were made with studies that used different methodologies and reference points in the business cycle). Nonetheless, the newly defined discouraged workers, although showing somewhat stronger ties to the labor force than under the prior definition, still had relatively weak links to the labor force, particularly as compared to the unemployed. These findings suggest that persons classified as discouraged workers, even under the new, more rigorous definition, find it difficult to translate their desire for work into subsequent employment or even an active job search effort.

The findings presented in this article also raise the question of whether the theoretical concept of hidden unemployment—with its connotations of strong labor force participation in a full-employment economy—should primarily refer to discouraged workers or should encompass others outside the labor force. Other marginally attached workers, that is, persons who cited reasons other than discouragement for giving up their job search, actually had a somewhat greater attachment to the labor force than discouraged workers. But, as expected, a person's desire to work, by itself, proved to be a considerably weaker indicator of future labor force activity than wanting work *and* conducting an active job search. □

Footnotes

[1] See Paul O. Flaim, "Discouraged workers and changes in unemployment," *Monthly Labor Review*, March 1973, p. 8.

[2] During this period, data were collected from only part of the CPS sample and were available only quarterly.

[3] Persons giving reasons other than or in addition to "discouraged" reasons were considered to be not available to take a job, and thus were *not* classified as discouraged workers.

[4] See *Counting the Labor Force* (Washington, National Commission on Employment and Unemployment Statistics, 1979), pp. 45–46.

[5] As an example, according to special tabulations of CPS data from the fourth quarter of 1977, 340,000 persons were not counted as discouraged because they were students or provided other reasons for not conducting a job search even though they also cited reasons of discouragement. (See *Counting the Labor Force*, p. 45.)

[6] See *Final Report of the Secretary of Labor on the Recommendations of the National Commission on Employment and Unemployment Statistics* (U.S. Department of Labor, October 1981).

[7] See Joseph L. Gastwirth, "Estimating the number of 'hidden unemployed'," *Monthly Labor Review*, March 1973, pp. 17–26; and Jacob Mincer, "Determining who are the 'hidden unemployed'," *Monthly Labor Review*, March 1973, pp. 27–30.

[8] See Barbara Cottman Job, "How likely are individuals to enter the labor force?" *Monthly Labor Review*, September 1979, pp. 28–34.

[9] See Gastwirth, "Estimating the number"; Mincer, "Determining who are the 'hidden unemployed' "; Flaim, "Discouraged workers and changes in unemployment"; Carol M. Ondeck, "Discouraged workers' link to jobless rate reaffirmed," *Monthly Labor Review*, October 1978, pp. 40–42; and Paul O. Flaim, "Discouraged workers: how strong are their links to the job market?" *Monthly Labor Review*, August 1984, pp. 8–11.

[10] See Christopher G. Gellner, "Enlarging the concept of a labor reserve," *Monthly Labor Review*, April 1975, pp. 20–28; and Job, "How likely are individuals."

[11] See *Counting the Labor Force*, p. 45

[12] The CPS follows a 4–8–4 rotation pattern in sampling households: a selected household is interviewed for 4 consecutive months, is then out of the sample for the following 8 months, and subsequently returns to the sample in the same calendar months the following year.

[13] Given that the data in this article focus on labor force status 1 year after a person was classified as not in the labor force, it is acknowledged that some labor force activity may have occurred in the intervening year but was

no longer true at the year-later point in time. The findings may thus underestimate the extent of subsequent labor force activity of some nonparticipants.

[14] The sample redesign of the CPS, implemented in 1994, was carried out in order to maintain the efficiency of the sample design by updating the sampling frame with 1990 census data. It had a negative impact on the number of matched cases from 1994 to 1995. That is, some households were removed from the sample while others were added in order to better reflect the population, reducing the number of matched cases in this study. For more details, see Richard A. McGuinness, "Redesign of the Sample for the Current Population Survey," *Employment and Earnings,* May 1994, pp. 7–10.

[15] Estimates in this section on characteristics of persons not in the labor force who wanted a job are derived from published annual averages for 1994, which are based on the full sample of households.

[16] For earlier empirical studies on this topic, see Flaim, "Discouraged workers: how strong are their links to the job market?"; and Job, "How likely are individuals."

[17] Certain questions in the CPS questionnaire are asked only of persons in those households that are in the outgoing (fourth or eighth month) sample rotation groups. Persons who are not in the labor force but want a job are asked questions about recent work experience and job search intentions. Unemployed jobseekers (that is, unemployed persons who are not on temporary layoff from a job) are also asked questions about their recent work experience.

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Use a touch-tone telephone and follow the voice instructions for entering document codes and your fax telephone number. The fax-on-demand catalog, containing a list of available documents and codes, can be obtained by entering code 1000. You may request up to four documents with each call. Faxes are sent immediately following the request. If your fax line is busy, the system attempts to send the requested material four times before disconnecting.

Introducing the North American Industry Classification System

John B. Murphy

In 1997, the Office of Management and Budget (OMB) announced the adoption of a new standardized system for classifying industries—the North American Industry Classification System (NAICS).[1] NAICS will replace the Standard Industrial Classification (SIC) system and thus represents one of the most profound changes for government statistical programs since the 1930s.[2] Although the current system has been revised and updated periodically, the basic structure has remained intact since its inception. The NAICS revision is much broader—many more industries are identified under the new system, and they are organized on the basis of their production activities (supply) alone, as opposed to the mixture of supply and demand characteristics used to classify industries under the SIC. NAICS also seeks to standardize the classification systems of the three partners to the North American Free Trade Agreement (NAFTA), the United States, Canada, and Mexico.

Industrial classification systems provide the structure for collecting and aggregating economic data, as well as for analyzing, presenting, and disseminating such data. Economic changes that have taken place in the last several decades—such as the movement toward a more services-oriented economy, the increased use of computers and other new technology, and globalization—have precipitated the need for a new system of industrial classification. Twenty years ago, for example, there was no need for statistics on communications resellers, database publishers, Internet service providers, or electronic publishers. NAICS identifies these and other emerging economic activities that do not easily fit into the current SIC structure.

Although converting to NAICS will provide many advantages, the transition to the new system also will create some difficulties for data collectors and users. Breaks will occur, for example, in many time series that are based on the SIC system. This report provides a brief overview of NAICS—covering its background, development, principles, structure, and implementation—and also discusses some of the issues that data collectors and users must face as more and more government and private statistical programs convert to the new system.

Background

Over the course of its economic history, the United States has gone from a largely agrarian economy in its earliest period, to one based more on manufacturing following the Industrial Revolution, to the current, more services-oriented economy of the late 20th century. To better accommodate the many new manufacturing industries and other changes that had occurred in the early 1900s, the Standard Industrial Classification (SIC) system was developed in the 1930s. The SIC system provided a consistent framework for assigning descriptive industry codes to each establishment, as well as for the subsequent collection, tabulation, and analysis of economic statistics by government agencies and private research firms.

Since its inception, the SIC system has been revised and updated periodically, about every 10 or 15 years. The most recent revision took place in 1987, when a number of new high technology industries were identified, especially within computer-related services. Categories for computer and software stores, video tape rental stores, and plastic bottle manufacturers, for example, were introduced for the first time in 1987.

The 1987 revision left 75 percent of the industries unchanged, however, and the basic structure of the system was left largely intact. Also, while the SIC system adequately reflects the manufacturing sector of the economy, it provides insufficient detail for the services sector. Newly developed industries in information services, health care provision, and even high-tech manufacturing cannot be adequately studied under the current SIC system because they are not separately identified at the most basic level of aggregation, the industry level.

Another shortcoming of the U.S. SIC system was that it was not strictly comparable with its counterparts in Canada and Mexico. To address this problem, representatives from all three Nations worked cooperatively to develop NAICS. The new system makes it possible to create comparable economic statistics from the three NAFTA trading partners.

NAICS development

The development of NAICS began at the International Conference on the Classification of Economic Activities held in Williamsburg, Virginia, in 1991. In 1992, OMB established the Economic Classification Policy Committee (ECPC)—chaired by the Bureau of Economic Analysis, and with representatives from the Bureau of Labor Statistics and the Bureau of the Census—to study alternate economic concepts (supply versus demand) by which to categorize industries and to recommend changes to the SIC system. In 1994, the ECPC chartered six subject-matter subcommittees and a Coordinating Committee to propose the structure of NAICS. The subject-matter subcommittees were charged with reviewing current industries and evaluating proposals for new NAICS industries

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Exhibit 1. NAICS structure and SIC structure compared

NAICS	SIC
Sector *(two-digit)*	Division *(letter)*
Subsector *(three-digit)*	Major group *(two-digit)*
Industry group *(four-digit)*	Industry group *(three-digit)*
NAICS international industry *(five-digit)*	Industry *(four-digit)*
National industry *(six-digit)*	

NAICS sectors		SIC divisions
11	Agriculture, forestry, fishing and hunting	A. Agriculture, forestry, and fishing
		B. Mining
21	Mining	C. Construction
22	Utilities	D. Manufacturing
23	Construction	E. Transportation, communications, electric, gas, and sanitary services
31-33	Manufacturing	
42	Wholesale trade	F. Wholesale trade
44-45	Retail trade	G. Retail trade
48-49	Transportation and warehousing	H. Finance, insurance, and real estate
51	Information	I. Services
52	Finance and insurance	J. Public administration
53	Real estate and rental and leasing	K. Nonclassifiable establishments
54	Professional, scientific, and technical services	
55	Management of companies and enterprises	
56	Administrative and support and waste management and remediation services	
61	Educational services	
62	Health care and social assistance	
71	Arts, entertainment, and recreation	
72	Accommodation and food services	
81	Other services (except public administration)	
92	Public administration	
99	Unclassified establishments	

on the basis of production or supply-based activities, as opposed to the former system that used a mixture of production and marketing (demand-based) activities as criteria for categorization.

To notify the public and evaluate their response, the proposed changes were published in a series of *Federal Register* notices from 1994 through 1996. In these notices, the ECPC solicited the help and advice of U.S. Government agencies, trade associations, data producers and users, researchers, academics, and the general public. The subject-matter subcommittees negotiated the structure of NAICS with their counterparts in Canada and Mexico during 1995 and 1996. The adoption of the new classification system was announced by OMB in a notice published in the *Federal Register* of April 9, 1997.[3]

Principles of NAICS

The former SIC system used a mixture of concepts to categorize economic activity. Some categories were based on demand groupings, activities that were similar in the eyes of customers or users of the product or service. Others, however, were based more on supply groupings. NAICS is the first industrial classification system used in the United States to employ a unified economic concept to define industries. Under the new system, industries are classified on the basis of their production or supply function—establishments using similar raw material inputs, capital equipment, and labor are classified in the same industry. This approach creates more homogeneous categories that are better suited for economic analysis.

Four primary concepts were used in the development of NAICS. First, a production-oriented conceptual framework was used—as described earlier, establishments engaged in similar production activities are classified together. Second, new categories in NAICS focus on emerging industries, services in general, and industries that produce advanced technology. Third, as much as possible, continuity with the former system was maintained to avoid breaks in time series. However, because of differences in the classification systems formerly used by the United States, Canada, and Mexico, many changes were needed to make them comparable. Thus, some breaks in time series were unavoidable. Finally, the developers of NAICS strove for compatibility with the two-digit level of the International Standard Industrial Classification of All Economic Activities.[4]

Structure of NAICS

While NAICS uses a hierarchical structure much like the existing SIC, there are a number of important structural differences. For example, NAICS uses a six-digit classification code which allows greater flexibility in the coding structure. The SIC system was limited to only four digits. Another important difference is that NAICS uses the first two digits of the six-digit code to designate the highest level of aggregation, with 21 such two-digit industry sectors under the new system. Under the SIC system, by contrast,

there were only 11 divisions, designated by letters of the alphabet. (A tabular comparison of terminology and a full list of NAICS sectors and SIC divisions are shown in exhibit 1.)

The third digit of a NAICS code represents the subsector. Using the information sector (sector 51) as an example, there are four separate subsectors contained in the sector: publishing industries, motion picture and sound recording industries, broadcasting and telecommunications, and information and data processing services. The forth digit of the NAICS code represents the industry group level. Under the publishing industries subsector, for example, there are two industry groups: newspaper, periodical, book, and database publishing; and software publishing.

The fifth digit in the NAICS code represents the international industry level. Continuing with the same example, there are 28 international-level industries in the information sector. In most cases, there will be comparability between the classifications of the United States, Canada, and Mexico at the five-digit level. The sixth digit in the NAICS code designates national detail. This allows the flexibility to create more detailed statistics for the industries that hold particular importance in each country. Of the 28 international industries within the information sector, 6 have been broken out to create important national detail for the United States. (Exhibit 2 shows the entire NAICS structure for the information sector.)

When the national detail is the same in more than one country, the same six-digit code is used in each country's national version of NAICS. The six-digit system allows for greater data comparability between the three countries than a four- or five-digit system. There had been significant differences in the former classification systems used by the United States, Canada, and Mexico. NAICS creates a standard system to be used by each of the NAFTA trading partners.

As shown in exhibit 3, there is no relationship between the numeric industry

Exhibit 2. Complete NAICS structure for information sector

NAICS code	Industry
51	Information
511	Publishing industries
5111	Newspaper, periodical, book, and database publishers
51111	Newspaper publishers
51112	Periodical publishers
51113	Book publishers
51114	Database and directory publishers
51119	Other publishers
511191	Greeting card publishers
511192	All other publishers
5112	Software publishers
51121	Software publishers
512	Motion picture and sound recording industries
5121	Motion picture and video industries
51211	Motion picture and video production
51212	Motion picture and video distribution
51213	Motion picture and video exhibition
512131	Motion picture theaters (except drive-ins)
512319	Drive-in motion picture theaters,
51219	Postproduction services and other motion picture and video industries
512191	Teleproduction and other postproduction services
512199	Other motion picture and video industries
5122	Sound recording industries
51221	Record production
51222	Integrated record production/distribution
51223	Music publishers
51224	Sound recording studios
51229	Other sound recording industries
513	Broadcasting and telecommunications
5131	Radio and television broadcasting
51311	Radio broadcasting
513111	Radio networks
513112	Radio stations
51312	Television broadcasting
5132	Cable networks and program distribution
51321	Cable networks
51322	Cable and other program distribution
5133	Telecommunications
51331	Wired telecommunications carriers
51332	Wireless telecommunications carriers (except satellite)
513321	Paging
513322	Cellular and other wireless telecommunications
51333	Telecommunications resellers
51334	Satellite telecommunications
51339	Other telecommunications
514	Information services and data processing services
5141	Information services
51411	News syndicates
51412	Libraries and archives
51419	Other information services
514191	Online information services
514199	All other information services
5142	Data processing services
51421	Data processing services

Exhibit 3. Comparison of the information industry under NAICS and SIC

NAICS code	Industry	SIC code	Industry
51	Information		No comparable grouping
511	Publishing industries		No comparable grouping
5111	Newspaper, book, periodical, and database publishers		No comparable grouping
51111	Newspaper publishers	2711	Newspapers: publishing, or publishing and printing
51112	Periodical publishers	2721	Periodicals: publishing, or publishing and printing
51113	Book publishers	2731	Books: publishing, or publishing and printing (part)
51114	Database and directory publishers	2741	Miscellaneous publishing (part)
51119	Other publishers		
511191	Greeting card publishers	2771	Greeting cards (part)
511199	All other publishers	2741	Miscellaneous publishing (part)
5112	Software publishers		
51121	Software publishers	7372	Prepackaged software (part)

codes used in the SIC and those used in NAICS. Also, the increase to a six-digit code does not necessarily mean that there is a corresponding increase in the level of detail for national industries. Under the SIC system, for example, there were 1,004 detailed industries, while under NAICS there are 1,170. In the exhibit, NAICS industries 51111 and 51112 match one-to-one with 1987 SIC industries 2711 and 2721, respectively. All other publishing industries were broken out of larger industries in the SIC, creating more industry-level detail. In some cases, however, two or more SIC industries were combined to form one NAICS industry, reducing the number of detailed industries in that category.

The NAICS manual format

The U.S. NAICS manual, *North American Industry Classification System—United States, 1997*, scheduled to be released in late July 1998, will differ substantially from its predecessor, *The Standard Industrial Classification Manual, 1987*. The new manual, for example, includes a narrative definition of each industry, a list of illustrative economic activities used as criteria for classification (index items), and a bulleted list of cross references for similar activities classified under other industry categories. Industries will only include illustrative examples and cross references when necessary. Another useful change from the SIC system is that users will now be able to search for cross references in the same place for each definition. (See Exhibit 4 for a draft definition of NAICS industry 511210, Software publishing, illustrating the format used in the new manual.)

NAICS implementation

NAICS will require a significant effort to implement. Large universe surveys such as the BLS Covered Employment and Wages (ES-202) program[5] and the Census Bureau's Economic Census[6] will have to assign new industry codes to the more than 7 million business establishments in the United States. In addition, during the transition period, SIC codes also will need to be assigned to create linkages between statistics classified under the two classification systems.

The ES-202 program will implement NAICS over a 3-year period. Beginning in 1998, establishments classified in SIC industries that were not altered by the revision will be assigned NAICS codes by computer. In 1999, establishments with 50 or more employees will be assigned NAICS codes during the annual refile survey. (Currently assigned SIC codes for these establishments will be verified at that time as well.) In addition, one-half of all establishments with fewer than 50 employees that are currently classified in SIC industries that were split into two or more parts will be surveyed and assigned NAICS codes. This phased-in approach will allow BLS to calculate estimates of the effects of NAICS by as early as the end of fiscal year 1999. In 2000, all remaining uncoded establishments will be assigned NAICS codes.

The timing of implementation for surveys such as the ES-202 and the Economic Census is critical to many other statistical programs that draw their samples from the universe files maintained for these comprehensive surveys. Sample-based programs cannot convert to NAICS until the universe frames on which they are based have been revised. Programs that use data from the universe and from sample programs will be the last to implement NAICS. The Producer Price Index (PPI), for example, uses BLS universe data for its sampling frame, data from the Economic Census for its structure weights, and other data produced by the Department of Commerce for its net output calculations. As a result, the conversion of the PPI to NAICS cannot be fully implemented until these programs have converted to the new system.

BLS currently is training staff persons at the regional offices and cooperating State agencies—those who will actually assign NAICS codes to establishments for the ES-202 program. Training for the regional office staff began in June 1998,

Exhibit 4. The NAICS manual format

511210 Software Publishers

This industry comprises establishments primarily engaged in computer software publishing or publishing and reproduction. Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers. These establishments may design and publish or publish only.

Illustrative examples:

Applications software publishing
Database software publishing
Game software publishing
Spreadsheet software publishing
Utility software publishing

Cross references. Establishments primarily engaged in—

- Reselling packaged software—are classified in Sector 42, Wholesale Trade or Sector 44-45, Retail Trade;
- Designing software to meet the needs of specific users—are classified in U.S. Industry 541511, Custom Computer Programming Services; and
- Mass duplication of software—are classified in U.S. Industry 334611, Software Reproducing.

and the regional office personnel will train the State coders within their regions throughout the summer and early fall. The training materials for BLS staff were jointly developed by the Office of Employment and Unemployment Statistics and the Office of Field Operations.

NAICS and data users

Although the implementation of NAICS undoubtedly will benefit most data users, the transition period may be difficult. There will be breaks in many time series, for example, that are based on the SIC system. The availability of time series data is essential for trend analysis, economic forecasting, and seasonal adjustment. In many cases, however, the NAICS changes are so significant that reconstructing historical data based on the new system will be difficult. For example, the old SIC system had no category for telecommunications resellers, and hence very little data were available for this industry. Similarly, at the higher levels of aggregation—such as the manufacturing or services divisions—many economic activities formerly classified in one division are now classified in another.

Another issue for data users involves the transition period, when some data will be based on the SIC and other data will be based on NAICS. As previously noted, most government and other statistical organizations will implement NAICS over a multiyear period. The resulting lack of comparability will create challenges for economic analysis. In sum, the NAICS revision presents a tradeoff between a new and improved classification system, which will help provide data for many new industries that formerly were not classified separately, and the inevitable time series breaks that occur whenever major revisions to classification systems or statistical programs are implemented.

THE LONG TERM BENEFITS OF NAICS will far outweigh the costs of implementing the new system. Specific economic data for many emerging industries soon will be available. Ultimately, NAICS will help researchers, policymakers, and other analysts to better understand the U.S. and global economies and the activities that generate economic growth. □

Footnotes

[1] See *Administration introduces new industry classification system* (Executive Office of the President, Office of Management and Budget), April 8, 1997. For more detailed information, see the NAICS page (http://www.census.gov/epcd/www/naics.html) at the official Bureau of the Census website (http://www.census.gov/), accessed May 15, 1998. The new manual, *North American Industry Classification System—United States, 1997*, is currently scheduled to be released in late July 1998 and may be ordered from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

[2] From 1938 to 1945, classification was based on the *Social Security Board Classification Manual.* In 1945, the basis was changed to the *Standard Industrial Classification Manual*, which has been used, with several revisions, ever since. See *BLS Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), p. 44, for a brief explanation and history of the current classification system.

[3] See the NAICS page at the Bureau of the Census website for copies of the *Federal Register* notices and other background on the new classification system.

[4] See *International Standard Industrial Classification of All Economic Activities*, 3rd rev. ed. (New York, United Nations Publications, 1990).

[5] For more information on the Covered Employment and Wages program, see *BLS Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), pp. 42–47.

[6] For more information on this survey, see the Economic Census page (http://www.census.gov/epcd/www/econ97.html) within the Bureau of the Census website.

International symposium on linked employer-employee data

A recent conference addressed the benefits and challenges of constructing data bases that link firm and worker characteristics

John Haltiwanger,
Julia Lane,
Jim Spletzer,
Jules Theeuwes,
and
Ken Troske

Employers and employees interact with each other every day in the workplace. However, the data collected and processed by government statistical agencies do not generally reflect that interaction. Historically, statistical agencies have collected information about the activities of workers from household surveys and information about employers from business surveys. While these surveys provide a wealth of information about the economy and society, there remains a large information gap, given the need to understand the interaction of employers and employees.

This need has been intensified by the dramatic changes in the international economy over the past 20 years. Changing trade patterns, technological developments, and the restructuring of jobs have had an unavoidable impact on workers. The full nature of this impact on earnings inequality, employment security, and worker incomes is not well understood, primarily due to a lack of adequate data.

The May 1998 conference on linked employer-employee data, held in Washington, DC, brought together a wide range of social scientists and statisticians representing more than 20 countries. One important reason for the international scope of the conference is that some other industrialized countries are much more advanced than the United States in constructing such data. Worker-firm linked data sets have been used to analyze the changing structure of the economy in Canada, France, Scandinavia, the Netherlands, and Belgium. Even in those cases, however, the data often are not comparable across countries, thus inhibiting international comparisons. The conference enabled researchers and statisticians, who too often work in isolation in their own countries, to become aware of the efforts made in neighboring countries.

While it is not difficult to make the case that there is a great analytical need for linked employer-employee data, there are a number of issues that have to be resolved before creating such a resource. Often foremost among these are limited resources and concerns about respondent burden. The most attractive option in many countries is to find some means of combining existing household and business data without having to initiate costly new surveys.

Second, the procedures for linking employer-employee data invariably involve sensitive administrative data. Therefore, the protocol for creating the data sets in secure environments that protect the confidentiality and privacy of survey respondents is a fundamental issue. The good news on these two fronts is that a number of countries have made significant progress in creating linked employer-employee data while protecting confidentiality. The conference offered extensive opportunities to learn about the return to these data creation efforts, as well as new approaches to dealing with confidentiality.

The aims of the conference, therefore, were to demonstrate that many linkage/access/confidentiality issues have been overcome in some countries, to discuss how those lessons can be applied to other industrialized and developing countries, to demonstrate by example the value of research based on linked employer-employee data, and to facilitate international comparisons.

John Haltiwanger (Census Bureau and University of Maryland), Julia Lane (Census Bureau and American University), Jim Spletzer (Bureau of Labor Statistics), Jules Theeuwes (University of Amsterdam), and Ken Troske (University of Missouri).

These broad goals led the conference to develop eight main themes:

- Creating employer-employee data sets
- Confidentiality of linked data
- Econometric issues
- Analyzing training and productivity
- Analyzing firms, workers, and wages
- Analyzing firms, jobs, and turnover
- Program development and policy analysis
- International comparisons

There were between two and four sessions devoted to each of these eight themes, with three papers presented in each session. The conference organizers invited eight rapporteurs to provide a summary and synthesis of the papers presented on each of the themes and report back to the plenary sessions. These reports are provided in the following sections. □

Creating employer-employee data sets

John Haltiwanger

Much has been said about the great research potential of employer-employee linked data sets, and many of the conference participants identified challenges to be faced in using such data. Several sessions of the conference focused on yet another challenge: the nuts and bolts of actually creating the data sets. The work needed to actually create linked data sets is extensive, tedious, and painstaking. It is of fundamental importance to realize that, although it is much more glamorous to talk about the new insights to be gained from these data, the insights are not going to come unless the data sets are established—and established well.

In investigating the possibilities, one of the panels considered the use of administrative data for creating employer-employee data sets. The panel focused on the Scandinavian countries, which have some of the best administrative data in the world. For example, in Sweden, researchers can draw on the following registers: the central business register; the population register; the register of education; the register of students; the register of social benefits; the register of jobseekers; income verification records; and tax return forms. There are similar sources in other Scandinavian countries. Of course, the administrative data do not exist simply for linking, but are powerful tools in and of themselves.

The United States does not have such rich administrative data—at least not all in one place. There is a fair amount of data in the Federal system, but it is spread across a number of agencies. Moreover, much of the most interesting administrative data are held at the State level. Some of the analysts participating in the conference had overcome this problem by simply going to the State level. However, State boundaries are pretty artificial. To the extent to which workers cross State lines to work, a State-level approach is not going to be sufficient.

Another approach to developing linked data sets involves Federal-State partnerships. The Bureau of Labor Statistics has a number of successful Federal-State partnerships, including the ES-202 and Mass Layoff Statistics programs. However, evidence presented at the conference suggested that substantial institutional barriers will have to be overcome to bring the administrative data in the United States together, while at the same time protecting privacy and confidentiality.

A related difficulty with U.S. administrative data (and this is true even in the Scandinavian countries) is that the data were not really intended for the purpose of linked data research. This problem can be addressed using yet another approach: surveys with intended matched employer-employee components. Surveys of this type, as outlined by conference participants from the United Kingdom, Canada, and Australia, ask a series of questions of a sample of employers. The researcher then obtains a list of employees from each employer, and permission from the employer is sought to conduct a second-stage survey of the employees. This approach is a top-down method. The alternative is a bottom-up approach, which involves obtaining a list of workers, asking them an extensive series of questions, and then getting their permission to contact their employer for a second-stage survey.

Although the potential of such surveys is great, the logistics for conducting them are complicated. And, which way should the surveys be structured, top down or bottom up? Attrition—what is lost in the second stage—is different depending upon that choice. Conducting the second stage is pretty tricky in either case. If one approaches an employer and asks to survey the employees, one must set up a very precise protocol to ensure that a random sample of workers is selected. In some cases, managers may ask only their best workers to be in the survey. Conversely, asking an employee's permission to talk to the employer is also a sensitive business.

Another interesting problem is deter-

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mining who knows what in the following sense: if one puts together a survey and wants to ask some questions of the employer and some questions of the employee, which questions should one ask of each? Sometimes, when both parties are asked the same questions, they give very different answers. Two-stage surveys also face a timeliness issue. If one collects data from the employer at one point, it might be some time before the corresponding information from employees is obtained.

Another limitation of survey instruments that have both employer and employee components is that most of them relate to a single point in time. From the perspective of the labor market analyst, this point-in-time approach may not be a particularly promising way to really get at labor market dynamics. To their credit, the Canadian survey agency is planning for a longitudinal component in its linked data sets but, given the high pace of worker and job flows, this design may be difficult to implement.

On the basis of evidence presented at the conference, this writer believes that the United States needs to pursue a mixed approach. This would involve exploiting the administrative data that we do have to the greatest extent possible. U.S. statistical agencies can build some core administrative record data bases that are comprehensive employer-employee matched data at the national level.

But it is also the case that such data sets in the United States will be fairly sparse. This might be overcome by linking the core administrative data to existing surveys to yield a much bigger "bang for the buck."

More generally, statistical agencies might adopt a plug-and-play approach towards surveys, existing or new. One can plug targeted modules into existing or new surveys—establishment or household—and make sure the two can be linked to the underlying core administrative data. However, there would always be the need for at least a few targeted surveys that have employer and employee components. The United States is going to need to push the administrative data as far as it can; this will require greater coordination across both statistical agencies and sources of the administrative data, and must include both Federal and State agencies. Achieving this coordination, developing the data, providing access to users for statistical and research purposes, and doing this in a manner that protects privacy and confidentiality will be a great challenge. □

Confidentiality of linked data

Gerald Gates

The conference highlighted the importance of confidentiality in linkages of employer and employee data. Papers on the topic consider two relationships—one involving administrative records holders who are asked to share responsibility for protecting their data bases with statistical offices and the other involving statistical offices that are asked to put their trust in nongovernment researchers. The approaches taken reflect the different motives of and consequences for the holders of the data in providing or not providing access to external users. Some important issues raised by the papers include: who should be able to see data collected with public funds; what motivates the holders of these data to share information; what methods have been developed to protect data and provide access; what are acceptable levels of risk and how do we measure them; and how do countries differ in their approach to this problem?

Confidentiality is arguably the most important right of respondents and the most important obligation of data collectors. Without it, fear will discourage many from participating in government programs or surveys. On the other side of the coin lies access. Collectors of both administrative and statistical data have an obligation to administer their programs efficiently, fairly, and openly. For the statistical office, this means using data that are available, rather than collecting similar information more than once, and requires cooperation from administrative agencies. The statistical office also has an obligation to make data widely available so that they can be fully analyzed.

The conference looked at access and confidentiality from the perspective of linked employer-employee data. Access depends on the legal obligations of the data holder to define and protect confidentiality and to permit legitimate access by others. The importance of confidentiality is apparent. The importance of providing access is less apparent, but equally great. One must remember that these data were collected with public money to serve important public interests. Providing access outside of government allows full use of the data for analyses and, as others can replicate the findings, ensures that such studies are scientifically sound. Once it is agreed that access is important, the question becomes how to provide access within the legal boundaries established by the confidentiality pledge.

Data protection involves establishing barriers to would-be intruders to make reidentification of respondents quite difficult. Some data are more difficult to protect than others. For example, microdata require different protection techniques than do tabular data. Business

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micro data are arguably the most difficult to protect due to the known presence of large businesses in the sample. For instance, any user of a survey of manufacturing establishments can assume that it includes firms that dominate their industry. Similarly, files that contain entire populations lose the protections afforded by sampling. Linkages of data from different sources create additional challenges, because special precautions are necessary to protect identities from those offices that hold the source data. Data that represent unique populations or that include unusual characteristics require greater protection. Longitudinality adds to the richness of the data, but also enhances the blueprint for discovering the identity of records. Many of these more-difficult-to-protect scenarios are found in linkages of employer and employee data.

Providing access to confidential data can be accomplished in two ways: putting restrictions on the data with few or no restrictions on access, or putting restrictions on access with few or no restrictions on the data. The papers presented at the conference confirm that there is a range of acceptable methodologies for each approach, depending on the nature of the data and the research to be done. What also is clear is that, while a lot of work is going on in the field of disclosure limitation methodology, the statistical community is just beginning to think about measuring the risk remaining in public data releases and whether that level of risk is acceptable.

The conference papers traced several common themes. First, statistical offices are considering ways to disguise source data rather than add noise to, or suppress, the output. Microaggregation techniques and subsampling are being considered for difficult-to-release business micro data. These approaches have limited appeal for the statistical agency because they must be tailored to each specific research objective. Output containing derived measures, such as covariance matrices, is recommended over raw data because of its built-in protections. Statistical offices also are looking at the inherent protections in the data created by nonsampling and measurement errors. In addition, statisticians are considering reasonableness criteria that take into account the costs in money and time needed to break the protections. Targeting disclosure limitation efforts at the intruder with unlimited time and resources is unreasonable, and prevents much important research. Other statisticians are eliminating unique cases from the output.

Restricting access to the data is becoming a much more acceptable choice for providing researchers with data. In some cases, it is the only choice. Several years ago, the only option for researchers involved relocating to the site of the statistical office for as much as a year in order to conduct research on the agency's mainframe computer. With the introduction of microcomputers and networks, statistical offices have begun to offer more flexible options. Some examples are licensing users to process the data at their own site; providing users with test files to use in writing their own programs, which the statistical office will run on the confidential data; and establishing regional secure sites in which researchers may work with the confidential data. In each case, the output is sanitized to protect confidentiality. The key to these arrangements is having the legal authority to share confidential data and establishing an atmosphere in which security is paramount.

The most consistent message from conference participants was that research access to data is important and can be accomplished when a mutual trust is achieved. The administrative office must trust the statistical office and the statistical office must trust the researcher. Winning this trust involves more than promises, however. Statistical offices have strong confidentiality protections in law and can provide needed reassurance to administrative offices. What remains to be addressed is an understanding of motives and consequences that respects the interests of all parties, and a clear knowledge of government's obligations to its citizens. Much of what is actually done results from a meeting of minds, not a legal mandate.

In the relationship between the statistical office and the researcher, legal protections are not uniformly available. Often, the statistical office is asked to trust the researcher who, it is argued, has no incentive to breach confidentiality and, in fact, would be harmed by lost access to future data. On the other hand, researchers do not necessarily have experience in handling sensitive data—an experience that makes taking extra precautions second nature. Some authors cite the need for strong codes of ethics for the statistical analysts. Some argue for legal contracts. Still others insist that laws should protect the data, regardless of who holds them. It is becoming clear that promises of a professional, subject to banishment for intentional or inadvertent breaches, are not sufficient to data providers.

In any case, this writer is encouraged to see that the techniques to provide access to data collected under a pledge of confidentiality are being shared around the world. Countries choose different options for data sharing, based primarily on cultural and organizational differences. Perhaps the most striking difference among the countries represented at the conference involved the ability to access administrative data for statistical purposes. In some countries, access is routine. In others, it is a difficult and time-consuming process. Some of this difficulty is due to decentralization of statistical functions. Some is due to motives for and consequences of sharing. Another point of departure involves sharing across borders. With the implementation of the European Union Directive on Transborder Data Flows later this year, and a similar directive coming out of the Council of Europe, the future of collaboration among the world's statistical offices is unclear. What is clear is that that some important advances are taking place in solving tough disclosure problems. □

Econometric issues

John Abowd

Several of the conference papers dealt with the econometric issues surrounding linked employer-employee data sets. One of the major themes of these papers is that using the information from entity matches improves the modeling of the target entity. There were two very interesting papers on using the same or similar information collected from both the employer and the employee to assess the quality of different measures. Others used matched employer and employee data to model outcomes that depend on the characteristic of both sides of the labor market. The final pair of papers address the design of statistical samples using the matched files.

For the benefit of the non-Americans in the audience, the main emphases of the papers that dealt with improved statistical modeling were measurements of employment flows and other outcomes using U.S. unemployment insurance (UI) data. The reason why there is so much interest in the American UI records is that they are the only data set that remotely resembles the kinds of administrative data files that many Europeans have been using routinely for research purposes for the better part of this decade. In addition, most of the U.S. work on employer-employee data sets has been done using linked unemployment insurance data.

Basically, the studies measuring unemployment duration and attrition or measuring compensation costs rely on linked data to provide critical missing information that eliminates important and untestable assumptions. The elimination of important and untestable assumptions is the value added, and the reason why linked data are critically important. In fact, virtually all of the analytical attempts that try to get around linked-data types of problems without using linked data fail.

The employment flow studies all use the unemployment insurance system data from the ES-202 program, which is the Bureau of Labor Statistics collection of a short list of firm-level unemployment insurance-related variables: the amount of unemployment insurance-related wages that the firm paid and the size of the establishment on a particular date in the month. BLS uses these data for a variety of purposes, including updating its sampling frame for establishments, and also has begun to promote research using the ES-202 data. These data have frequently been used for measuring employment flows. In fact, studies based on these data generally demonstrate that employment flow calculations are plagued by false births and deaths of firms. Those studies link information from individual wage and benefit histories—different researchers use different sources—and then compare the employment counts or the unemployment counts thus obtained with information reported on the ES-202 form of the appropriate firm. In this way, the analysts get a handle on where the false births and deaths were occurring.

In the papers on attrition and unemployment duration presented at the conference, the frame for the survey is the unemployment insurance administrative data. This data set provides researchers with the universe of people who suffer an unemployment spell, at a particular point in time, and hence an uncensored sample of the durations. The analysts complement this information with the survey findings, and the survey's measure of unemployment durations. About half of the observations in the survey are censored. The symposium paper shows that the linked data permit identification of the nonresponse bias in the estimation of the unemployment duration or the unemployment exit hazard, if you will, in the survey data. Furthermore, this procedure seems to perform better than any other in resolving the attrition bias. Basically, the results suggest that certain categories of attriters, the ones who do not show up in the survey but do show up in the administrative data, had systematically different unemployment duration spells, exactly what one would expect, and that there is no available instrument for correcting this problem.

There is an ongoing controversy about the role of computers and the wage structure—how do the earnings of workers who use computers compare to those of workers who do not. One approach to this problem that was explored at the symposium uses a data set whose structure is quite similar to that of data that have been collected by the Bureau of Labor Statistics and other U.S. agencies. Essentially, this involves surveying a few workers per firm, assuming that the original frame of the sample was designed to be representative of workers. The link is then made back to the employing firms, which have been identified as part of the sampling procedure, and, on the basis of this information, the analyst can go to an administrative data source and get additional information on the employer-employee relationship. So long as the analyst has some firms contributing two or three workers to the survey sample, he or she can actually use these linked data to improve the quality of variables that are measured at the level of the individual worker.

Another technique discussed at the conference was measuring year correction. Studies based on this technique used nonclassical measurement year models to show that linked information coming from the employer greatly improves the measurement year and education variables in one case, and pension information in another. Analysts actually have known for about a decade that,

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in order for pension information to be truly accurate, it has to be obtained from the employer. Evidence presented at the conference confirms that observation, although it suggests that employees do know more about their pensions than they used to.

Some of the papers focused on the value of using characteristics from both sides of the labor market in analyses of the employer-employee relationship. In his own paper, this writer used French data to model the differences between individual- and firm-level heterogeneity in wage determination. Another paper considered unemployment inflows. A fundamental conclusion of these studies and of others that are done on matched data—primarily matched data in European settings—is that there is an enormous amount of heterogeneity that is not explainable by the observables, even though the usual culprits—education, experience, location, and year—are accounted for. It is also not explainable by the characteristics of the firm.

The symposium papers identified the areas for future research in terms of heterogeneity due to the workers and heterogeneity due to the firms. The only way to tackle these issues, as it turns out, is with matched employer-employee data. In fact, for many of these applications, the data have to be longitudinal along at least one dimension.

The papers in the final session that this writer observed provided novice users of linked data with a pretty good set of guidelines for managing likelihood functions and sampling, so that the end result will be representative of the thing the analyst wants it to be representative of. That is not always an easy task to do, so these papers are recommended reading. □

Analyzing training and productivity

Lisa M. Lynch

Productivity, training, and the impact of technological change on the relative demand for skilled workers are areas of inquiry that benefit enormously from the use of linked employer-employee data. The symposium papers on these topics all extend our understanding of the dynamics between firms and workers across countries.

In the session on productivity, results of studies using data from three countries (Belgium, Norway, and Italy) suggest that employers in each of these countries have settled into multiple equilibria of wage policies and productivity strategies. For example, some Norwegian firms apparently have sucessfully adopted a low-wage, low-productivity strategy, while others have opted for a high-wage, high-productivity equilibrium. In Belgium, some firms have chosen to compress wages and have low employee turnover, while others allow greater inequality within the firm along with higher turnover. By matching micro data on firms and workers, the authors are able to document this heterogeneity of practices within countries. What is missing from these analyses is more detailed information about firms' specific human resource management (training, incentive-based pay, employee involvement in decisionmaking), and employee characteristics such as training received, previous actual work experience, and family structure. In addition, none of the samples used in these papers is from a nationally representative survey of employers.

In the session on training, the use of matched data sets helped to move the analysis beyond measuring the incidence of training within a country. A paper on the Netherlands provides evidence of the significant return to investments in training for productivity in manufacturing, based on a measure of the stock of worker skills, rather than just training incidence. A paper on the United States shows the degree of complementarity between training and other high performance workplace practices. The final paper, using data from a new longitudinal Workplace and Employee Survey (WES) by Statistics Canada, is particularly interesting because it has detailed information on both establishments and workers, with outcome measures (such as value added) for a representative national sample of employers. This survey will serve as an important model for other countries in improving linked employer employee data.

Another session dealt with the role of technological change and the relative demand for skilled labor. Linked employer-employee data allowed researchers in Canada to look at whether technology has deskilled or upskilled workplaces. They find strong evidence that "high" technology adoption has upskilled the workplace. A paper on Finland's manufacturing sector suggests that one of the reasons why relative wages between skilled and unskilled workers did not widen in the 1980s and 1990s may be that the relative supply of skilled workers was able to keep pace with the relative demand. A paper using Dutch data shows the benefits of matching employee and employer data in order to look

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at the flows of workers into and out of firms and jobs by the degree of job complexity. What is missing from most of the data sets cited this session, with the exception of the Canadian data, is information on how workers upgrade skills outside the formal education system, and the nature of the specific skills that are required by the new technologies adopted by employers.

In sum, linking employer-employee data sheds new light on the determinants of productivity, training, and the impact of new technology on the workplace. But relying on existing data sets that have not been designed for the explicit purpose of examining these issues does not guarantee the detailed information needed for economic or policy analysis. So, what would the ideal data set be? It would be a large nationally representative longitudinal matched employer-employee survey. The survey would need to be longitudinal so that analysts could observe changes in workplace practices, such as training and compensation, in the face of changing product demand, technology, and work organization. By collecting information on both workers and employers, analysts could determine the relative contribution of worker characteristics, versus management practices and product market conditions, on outcomes of interest. Looking at both workers and firms would also yield an understanding of the relative impact of policies, such as welfare reform, that encourage individuals to seek employment and employers to reach out and hire and train former welfare recipients.

Barring a national commitment to design a matched longitudinal survey of employers and employees in the United States, what else could improve some of the existing linked employer-employee data sets? The ongoing efforts to match existing data bases housed at different statistical agencies (both Federal and State) are critical to improving our understanding of the impact of organizational change, trade, and technology on firms and workers. In addition, designing supplemental samples of employers and employees that can be matched with existing data sets to look at issues such as workplace practices and productivity will provide valuable information. These could be supplemental surveys administered to all survey respondents, such as the Annual Survey of Manufacturers, using as a model the techniques currently used by the Bureau of Labor Statistics in the Current Population Survey. Or researchers could be encouraged to design surveys that are administered to subsamples of existing data sets such as the Census Bureau's Standard Statistical Establishment List. The recent National Employers Survey sponsored by the National Center on the Educational Quality of the Workforce is a model of this approach.

One of the benefits of having an international symposium on linking employer and employee data is that one realizes that there would also be enormous benefits to considering ways to match observations across countries. In particular, as we try to design policies to help workers and firms succeed in an increasingly global economy, it is clear that being able to follow multinational companies as they move production and use suppliers around the world would be useful. □

Analyzing firms, workers, and wages

Erica L. Groshen

Three sessions of the conference, encompassing nine papers, dealt with the use of linked employer-employee data for the analysis of firms, workers, and wages. The papers cover seven countries and use data from a wide variety of sources. Nevertheless, they have very similar—primarily descriptive—goals. Eight measure how employers' pay levels or structures differ from each other. The ninth looks particularly at how men's and women's pay varies within and among firms. In essence, all test for the existence and importance of employer heterogeneity: do employers act differently from each other?

To conceptualize how linked data help analysts to understand this basic question, consider the total variation in wages. One portion of variation due to worker characteristics we can measure. This is the level of explanatory power normally achieved in wage regressions on cross-sectional household survey data. If we knew more attributes, it might be larger. Expanding to longitudinal data allows researchers to measure even more individual wage effects—including those due to unobserved factors, such as motivation or family connections. Similarly, knowing the employer and observing its characteristics allows separation of two more nested sources of variation—the portions due to observed and unobserved employer attributes.

The conference papers ask whether the employer characteristics account for much variation beyond that encompassed by the individual characteristics. The issues include employer sorting by worker attributes—that is, employers tending to choose workers with particular characteristics and pay accordingly. This sorting produces questions of overlapping; when we have information on only one "side" of the labor market, overlaps are attributed solely to the side measured.

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With information on both sides, the sorting overlaps can be measured. If employers were simple price-takers, the employer variation would be entirely within the larger individual effects. To the extent that employers set wages independently of the market, the employer data add information about variation outside of the individual variation.

Which aspects of employer-employee data allow the researchers to measure employer variation? Even omitting complications such as interaction effects, wage variation has many components. The richer the data at their disposal, the more easily researchers can distinguish among these components. In particular, when the data include individual and employer identifiers, researchers can augment the original data with information gathered elsewhere. As research progresses and new policy issues arise, this flexibility often proves invaluable.

Summarizing broadly, the papers on firms, workers, and wages consistently find that employers do the following:

(1) *Set wages.* Employer wage differentials are an important part of wage dispersion in all cases (eight papers, covering seven countries).
(2) *Sort workers.* Worker heterogeneity accounts for a noticeable share—but far from all—of "raw" employer wage effects.
(3) *Behave systematically.* Employer effects are correlated with observed employer characteristics (size, product market, and so forth).

Overall, these findings make it clear that we can improve our understanding of wages and other labor outcomes by studying employers' activities. To take full advantage, research needs to push in three directions: pursuing policy topics, enhancing employer-employee matched data, and adding theoretical guidance to the investigations.

The finding that wages and other outcomes differ markedly and systematically among employers implies that all labor market questions and most policy issues have a key employer angle. Having established the fact of heterogeneity, the logical next step is to exploit it. In particular, such heterogeneity provides a new means to move policy analysis beyond the ambiguities of time-series studies to a comparison of the activities of different types of firms.

A wealth of new and old topics awaits investigation from the employer angle. The papers discussed here make progress in that direction—addressing questions of rising wage inequality, the male-female wage differential, and economic development. Other potential topics (including welfare-to-work transitions, outsourcing, advance notice legislation, and training methods) will expand our understanding of labor markets. Many issues from other branches of economics also are ripe for investigation, such as mergers and acquisitions, inflation, and macroeconomic policy. □

Analyzing firms, jobs, and turnover

Simon Burgess

Worker turnover generally refers to the movement of workers around the labor market, between firms, and among the states of employment, unemployment, and inactivity. It has been known for some time that worker turnover and job turnover are "large." The advent of linked employer-employee data allows further insight into this issue, as exemplified by the eight conference papers devoted to the subject.

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Labor markets are busy places. Huge numbers of workers are moving between jobs and between employment and unemployment all the time. Firms and jobs are being born, growing, declining, and dying. Even in "sclerotic" European labor markets, turnover figures are very high—far higher than would have been thought 10 years ago. Indeed, comparability worries aside, rates of job turnover appear to be as high in Europe as in North America. It is for labor markets to ensure that this reallocation of jobs and workers proceeds as smoothly and efficiently as possible. This matters for unemployment, aggregate growth, wage dispersion, and perceptions of job insecurity.

Regarding unemployment, the efficiency of the labor market in allocating workers and jobs clearly affects the duration of unemployment and of vacancies. At a deeper level, the reallocation process affects the proportion of job change that is accomplished via unemployment. While somewhat neglected by the literature, worker turnover influences aggregate growth rates by setting the speed with which workers are moved to the most profitable uses and by influencing the incentives for stable job matches. Labor reallocation also matters for earnings dispersion: if different firms pay different amounts to the same worker, then the allocation of workers to firms matters for earnings inequality. Finally, worker turnover appears to influence workers' feelings of "insecurity" (though quite how is not clear).

Almost all existing studies in this field use surveys on firms with a little information on their workers, or surveys on workers with a little information on their employers. But having information on both of the parties is very useful. Forming a job match, the unit for defining worker turnover, is a *joint* decision. While ending a job match is a unilateral decision, the firm's decision about whom to terminate may depend on worker characteristics, and a worker's decision to quit may depend on the employer's characteristics. Thus, one gets a much better understanding of the process of worker turnover with detailed information on both parties.

There are a number of examples in which this is the case. The first involves the links between flows of *jobs* and flows of *workers*. At a macro level, this matters significantly: unemployment, for example, is clearly about flows of workers, but how does this relate to flows of jobs? European and American job flow rates are similar, but worker flow rates are much higher in the United States. Why, and does this matter for unemployment rates? At a micro level, do firms grow by hiring more or by reducing separations? Or do they shrink by stopping hiring or raising separations? Do some firms do other things? If so, why? Does the pattern change over the business cycle?

Second, one can consider the allocation of workers to firms. Economists believe that this is not random, but driven by the decisions of optimizing actors. What types of workers work at which types of firms? Why? How does this change over time? Are some configurations better (more productive, more profitable) than others?

Third, linked data permit us to empirically examine firms' personnel policies—that is, the decisions by firms as to whom to hire, what to pay them, how much turnover to tolerate, and so forth. For all but the smallest firms, some rate of worker turnover is predictable, and, to some extent, within the power of the firm to control. What is the relationship between the firm's choice of wage premium and its rate of excess worker turnover? The wage premium can be isolated only if one knows the outside opportunities of the firm's workers, which in turn can be known only if the workers' characteristics also are known. One must remember, though, that the firm chooses its work force composition, so that is also a choice variable, along with the premium.

The papers presented at the conference are largely concerned with two of these themes. The one paper that differs a little considers in some detail the definition of a job. The authors aim to carefully document the impact of changing the definition of the employing unit on measured worker turnover. They are particularly concerned to quantify the implications of changes in ownership of the firm.

The remaining papers focus on two issues: (a) the relationship between worker flows and job flows—specifically, which workers leave contracting employers and/or which workers join expanding employers, and the impact of employer characteristics on worker mobility; and (b) the link between an establishment's rate of excess worker turnover (churning), and its wage premium.

Two papers are concerned with problem of European unemployment. In particular, they investigate the linkages between unemployment flows and establishment job dynamics. Because employment change obviously implies a minimum number of worker flows, this is mainly about identifying *which* workers move. By correlating an individual's chance of separating from a job with his or her establishment's (employment) growth rate, one may focus on the age profile of mobility. In France, the age-mobility relationship is very steep. Older workers in France are much more insulated from poor performance by their firms than are their counterparts in Sweden. One problem with the interpretation of the study arises because the information on the employer is limited. For example, suppose an establishment shrinks by one job, but experiences five separations, of which four are young workers and one is an older worker. This would suggest that the young bear a disproportionate burden of the adjustment. But if the four replacement hires are all young, then this paints a different picture. A second problem is that separations are not classified as quits or layoffs. But suppose they were identified: a complete analysis would require further information on the job matches of the employer. This is because the layoff probability, given the employment change, depends on the quit rate of the respondent's coworkers.

Another paper investigates the impact of establishment-level job destruction on worker flows in Denmark. This is portrayed in two parts, the relationship between the separation rate and the job destruction rate, and second, the subsequent unemployment experience of those separating. In fact, the author of the paper finds relatively little impact of job destruction on unemployment. Again, despite having an excellent data set, this study also suffers from the fact that separations are not classified into quits and layoffs. The author deals with this by aggregating establishments into "growing," "stable," and "declining," and assuming that total separations in the "stable" firms can be taken as an approximation of a common quit rate. This rate is then subtracted from total separations in the declining group to yield an estimate of the layoff rate. Clearly crucial for this step is the assumption that the quit rate is independent of the layoff rate and job destruction, which seems questionable. The level of unemployment among workers separating from contracting firms is reported to be no higher than that among those separating from stable firms. But, given the degree of aggregation, it may be that the age make-up of the different populations is very different, and this obscures any real unemployment effect.

The next two papers had access to fuller data sets. One has separations information for the Netherlands that does distinguish between layoffs and quits and relate an individual's chance of layoff to the characteristics of the (soon-to-be-

left) employer and to the individual's own characteristics. Both age and seniority within the firm matter. Also, as theory would predict, the firm's quit rate and layoff costs both reduce layoff rates. The former result confirms the need for detailed information on the employer and employee for this sort of analysis. The latter result provides evidence on the importance of adjustment costs and employment protection legislation.

An investigation of worker and job flows in Sweden shows that many of the standard findings hold also in that country. The core of the new analysis relates to the changing composition of firms' work forces as they expand or contract. Again, because job flows imply some worker flows, this analysis is intended to identify who is most mobile. Because we cannot identify who fills which job, we look at the age and educational composition of the work force to find that contracting establishments tend to lose workers with low educational attainment and growing establishments tend to attract workers with high levels of education.

Next up is a look at the relationship between excess worker turnover (or churning), plant size, and the establishment average wage level in Denmark, following this relationship over the business cycle. Turnover is higher in plants with lower wages and this relationship is stronger in booms. Also, turnover is higher in small plants. This study uses the actual plant wage, as opposed to the next study, which estimates a wage *premium*.

That paper investigates the relationship between employer's choice of wages and worker turnover in Norwegian data. Data on employees are used to estimate an outside wage and, hence, compute the employer's wage premium. They confirm that higher idiosyncratic wages are associated with lower turnover. The authors also estimate employer-specific wage-seniority profiles, and show that steeper profiles also are associated with lower turnover. They note that these results apply most strongly to larger firms.

Finally, the authors of the last paper use Danish data to compute establishment level turnover and relate these to the characteristics of the work force. Remaining establishment-level idiosyncrasies are explained using establishment characteristics. Then, tenure data are given the same examination. The role of unobservable heterogeneity that can be captured due to the longitudinal element of the data is highlighted.

How should these results be interpreted? Clearly, wage policies are *chosen* by firms, and chosen, among other things, to raise productivity by reducing turnover. So regressing productivity or (excess) turnover on estimated parameters of the firm's personnel policy in effect quantifies the degree to which these policies are successful. But the next step is surely to ask *why* some firms adopt some strategies and other make other choices. That is, to correlate the parameters of the personnel policy with variables describing the employer's environment, such as the technology set available, local labor market conditions, demand volatility, and the trainability of the work force.

To understand unemployment, aggregate growth and earnings dispersion, we need to understand the forces underlying worker turnover. One key element of this is the employer's choice of personnel or wage policy. The *only* feasible way to analyze this is by using linked employer-employee data. We need data on employees working at an establishment to be able to characterize the wage policy. We then need data on the employer to understand why some employers choose particular policies. □

Program development and policy analysis

Daniel H. Weinberg

In developing linked data sets, there are three different types of matching that can go on—survey to survey, survey to administrative records, and administrative records to administrative records. (Administrative records are defined here as data collected for a separate purpose than research, such as regulation or enforcement.) Exibit 1 presents an overview of some existing and proposed U.S. data sets created by the Census Bureau and puts the conference papers touching on the use of linked data in policy analysis into the three-way classification.

The first type of match—survey-to-survey—is represented by the Worker-Employer Characteristics Database (WECD). The WECD linked survey data from the 1990 decennial census long form to employer data from the Annual Survey of Manufactures, the Census of Manufactures, and the Survey of Manufacturing Technology (and possibly others) via use of location information to identify the Standard Statistical Establishment List number. Another attempt will be made in 2000 using both location information and employer name, and probably industry classification. A second U.S. example is a proposed link between the March 2000 Current Population Survey (CPS) and the 2000 Decennial Census, to be used to study nonresponse.

The key issue in linking two survey data sets is the representativeness of the resulting file. One has to have either two very large surveys, or surveys with the

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Exhibit 1. Examples of linked employee-employer data sets

Type of linked data set	Example
Survey data with survey data	**United States.** Worker-Employer Characteristics Database (1990 Census long forms with 1990 Annual Survey of Manufactures and other surveys)
	United States. March 2000 Current Population Survey with the 2000 Decennial Census [proposed]
Survey data with administrative records	**United States.** March 1991 Current Population Survey with 1991 Internal Revenue Service Individual Master File (tax returns)
	France. Annual Social Data Reports with Permanent Dynamic Sample, 1984–89
	United States. Unemployment insurance data with employer layoff survey (Mass Layoff Statistics program), other North Carolina data, 1995–97
	Japan. 1992, 1993, and 1994 Basic Survey on Wage Structure with the 1991 Censuses of Commerce and Establishments and 1992 and 1993 Censuses of Manufactures
Administrative records with administrative records	**United States.** 2010 decennial census (test in 2000): links Internal Revenue Service tax returns with other data, such as drivers' licenses (supplemented by some field work) [proposed]
	United States. Aid to Families with Dependent Children program with the States welfare-to-work program, and unemployment insurance program, 1992–95 (in cooperation with the State of Missouri)
	United States. Workers' compensation permanent partial disability claims data for 1991–94 with unemployment insurance records for 1989–96 (in cooperation with the State of California.)
	United States. Unemployment insurance records for various years with ES-202 establishment reporting data and other administrative data (in cooperation with the State of Texas)

same (or very similar) sampling frame. The WECD is representative of the first type, but if censuses are considered administrative records systems, none of the six conference papers fits this category.

The second type of match involves linking survey and administrative data. The Census Bureau has linked the March 1991 CPS sample to Internal Revenue Service income information from tax returns via an exact match, using Social Security numbers. A similar project is planned for the March 1997 CPS. Three of the symposium papers also dealt with this type of match.

The final type of matching is done between two (or more) sources of administrative records. The Census Bureau's Administrative Records Research Staff is looking into the possibility of an administrative record census for 2010. A major test of population coverage for such a census is being planned for several sites in conjunction with the 2000 census.

How worthwhile are such matches? The value of such matched files depends in large part on the *accuracy* of such matches, the *coverage* of the relevant population universe, and the *completeness* of the data in the two sources. The policy *relevance* of the papers depends critically on these three aspects as well.

Investments in overcoming problems with linkage accuracy, coverage, representativeness, and data completeness will all help increase the policy relevance of this kind of research. Given that the four U.S. labor market studies all used the unemployment insurance data, it is clear that further work in this area would benefit from creating a national unemployment insurance data base, allowing researchers to find individuals who either work in a different State, or have moved between observations. □

International comparisons

David G. Blanchflower

Six of the papers presented at the symposium dealt with the use of linked data sets for international comparisons. Two described the data collection procedures in individual countries—the first, for the United Kingdom, and the second, for the Czech Republic. Two others addressed the difficulties involved in integrating data on employers and employees from the member countries of the European Union. The final two papers used employer and employee data on job flows and job turnover in formal econometric analyses.

Four of the papers were from representatives of statistical agencies that collect labor market data. Two gave very useful suggestions on how to harmonize data collection across member countries of the European Union. For analysts who are interested in working on comparable micro data—on workers and firms—across countries, the experience provided by the presenters is invaluable. The hope is that statistical agencies in other countries might learn from the suggestions presented and attempt to harmonize their surveys with those in the European countries as well.

A major concern of the authors of each the four papers from the statistical agencies was a series of definitional questions: how to define a job, unemployment, and so forth. They want to be able to assign people and firms to boxes and to generate an integrated system of labor accounts. This is not a term that most researchers will be familiar with. Statistical agencies would like to ensure that their estimates from employer and employee surveys overlap as much as possible. The idea is to assure the public that the published data are believable. It would seem that problem of tracing very small or new firms to keep up-to-date sampling frames would severely complicate these efforts.

The problem of creating adequate sampling frames was well illustrated in the paper on the Czech Republic. In the early 1990s, the Czech Republic was transforming itself into a capitalist country, and there was such a rapid change in the number and size of firms that it proved almost impossible to generate a meaningful sampling frame. As an illustration, in the 1980s, about 1 percent of the Czech labor force was self-employed, but by 1996 that number had risen to more than 20 percent.

Over time, many other national labor markets also have become more complex. There has been a considerable growth across the whole of the Organization for Economic Cooperation and Development (OECD) in the proportion of young people who both attend school and work. Double-counting individuals who have two jobs or who are employees in their main activity but are self-employed in a second job is likely to cause further problems. This makes establishing a consistent set of labor accounts extremely difficult.

The last pair of papers involved econometric analyses of data. One showed the difficulties of reconciling data on worker flows using establishment, firm, and worker data separately. Useful insights can be obtained by extending the analysis to involve data that match workers to their employer. The final paper used establishment-level data to examine job turnover across a number of OECD countries. Unfortunately, consistent patterns in the data across countries are hard to find, despite gallant attempts to make the country data files comparable. As an example, measured job turnover is actually higher in Sweden, New Zealand, France, Canada, and Australia than it is in the United States. This is likely to come as a surprise to those who equate the flexibility of U.S. labor markets with high turnover, and the inflexibility of European markets with low turnover.

Perhaps even more surprising is that measures of turnover appear to be uncorrelated with macroeconomic variables such as the unemployment rate. In a number of circumstances, the correlation has the opposite sign than would have been predicted. It remains unclear if this finding is driven by inconsistencies in the way the data are derived or if there really are no systematic differences across countries. If one had consistently defined worker-employer matched data across countries, where the data were collected in a consistent way, it might well be possible to show that labor markets in countries with certain kinds of policies worked more efficiently than those with other types of policies. All one can say at the moment is that the jury is still out on whether it is good or bad to have high job or worker turnover.

As far as this writer could tell from the four papers from statistical agencies, they had no obvious need to actually link employer and employee. From the researchers' perspective, establishing a system of labor accounts does not take us very far in understanding how the labor markets actually work. Conferences such as this one present a unique opportunity for the researchers to explain to those who collect the data why they want access to matched employer-employee data, and to demonstrate that there is a payoff in improved understanding from the substantial expenditure that is involved in careful matching. Collecting and presenting the numbers in a consistent way is an essential complement to the work of the researcher, but in itself is not going to help us better understand labor market problems.

How can our understanding of how labor markets work be improved? It is necessary to get at both the firm and the workers' behavior. We need to move beyond inferring motives for particular

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types of behavior and begin to observe the behavior itself. We need to find out what is happening at the workplace by talking directly to the principal actors—the owners, customers, debtors, creditors, managers, and workers. It would be desirable to complement establishment-level data with detailed interviews with managers, and to group establishments together to constitute the firm. The purpose would be to examine the decisionmaking process and the internal and external factors influencing it. Does having a management team trained at Harvard give you better performance than having one trained at Dartmouth's Amos Tuck School or MIT's Sloan School? We have little or no idea. Also, there is an argument for conducting interviews with workers and their families. Apart from things like schooling and industry, we might like to know about their consumption behavior, their use of time, and their aspirations, so that these kinds of information can be matched to worker and firm data to help us get at behavior.

There is much to be learned from international comparisons, especially in macroeconomics, where the big questions are. During the 1990s, there has been a dramatic rise in the availability of microdata on both individuals and households across a whole array of countries. Many countries have CPS-type surveys; unfortunately only a few make those data available publicly. The Eurobarometer survey series conducted in the member countries of the European Union and the International Social Survey Programme both run the same survey in a variety of countries. Long time runs of these data series are now available (from 1973 in the former case, and from 1985 in the latter). The World Bank's Living Standards Measurement Study and the Luxembourg Income Study are other programs that provide broadly comparable microdata files across many countries. There are even comparable panel surveys of individuals available across countries, including the National Longitudinal Survey in the United States, the British Household Panel, and the German Socio-Economic Panel. There also are one or two examples of establishment surveys being conducted across countries. The best examples of these are the British Workplace Industrial Relations Survey and the Australian Workplace Industrial Relations Survey, which have similar sample designs and ask broadly similar questions. Participants at the conference learned that matched worker-firm data already are available from France, Denmark, the Netherlands, Italy, the United Kingdom, and Norway. While it remains unclear how internationally comparable these surveys are, a start obviously has been made. □

Sexual harassment

In 1986, in *Meritor Savings Bank* v. *Vinson*,[1] the U.S. Supreme Court held for the first time that unwelcome sexual advances at work create a hostile work environment which constitutes gender discrimination under Title VII of the 1964 Civil Rights Act. Before 1998, that landmark ruling was followed by only one other Supreme Court decision on the issue—*Harris* v. *Forklift Systems*,[2] in which the Court declared that the psychological well-being of a plaintiff need not be seriously affected in order for the plaintiff to demonstrate that an injury has been suffered in violation of Title VII.

In 1998, the Supreme Court revisited the definition of sexual harassment in four separate cases, answering the questions of (1) whether a claim of same-sex sexual harassment may be brought, (2) what legal standard should be applied to determine whether employers are liable for sexual harassment committed by workers with supervisory power, and (3) whether a claim of quid pro quo ("this for that") sexual harassment may proceed without showing that the employee submitted to sexual advances or was harmed for refusing such advances.

In *Oncale* v. *Sundowner Offshore Services, Inc.*,[3] the High Court ruled that Title VII prohibits sexual harassment between members of the same sex. The legal standards governing same-sex claims, the Court held, are identical to those used to evaluate a claim of sexual harassment by a member of the opposite sex. Justice Anton Scalia reiterated the standards for evaluating such claims: "The objective severity of harassment should be judged from the perspective of a reasonable person in the plaintiff's position, considering 'all the circumstances.'"[4] The *Oncale* opinion reasserts that this determination must account for the social context in which a particular behavior occurs and is experienced by the individual who is the target of the alleged harassment. Courts must distinguish between simple teasing and roughhousing among members of the same sex, which is not sexual harassment, and "conduct which a reasonable person in the plaintiff's position would find severely hostile or abusive."[5] Title VII, said the Court, forbids only behavior that is "so objectively offensive as to alter the 'conditions' of the victim's employment."[6]

The plaintiff, Joseph Oncale, worked as a roustabout on an oil rig in the Gulf of Mexico. He claimed that male coworkers forcibly subjected him to sex-related, humiliating actions by two supervisors in front of other crew members. He further alleged that, despite reporting these incidents to Sundowner management, the company did not take any corrective action.

The Court's decision in *Oncale* reversed an earlier holding by the fifth circuit, which ruled that Title VII provided no remedy to a plaintiff claiming same-sex harassment. Other State and Federal courts had taken a variety of stances on this legal question, which provided the impetus for the Court to grant *certiorari* and clarify the question.

In *Faragher* v. *City of Boca Raton*,[7] the Court held that employers are subject to vicarious—or strict—liability for sexual harassment caused by a supervisor. Such liability can be found where a hostile work environment is created through sexual abuse and threats by a supervisor with immediate or successively higher authority over an employee or where a supervisor takes a "tangible employment" action (for example, termination, demotion, or loss of pay) against an employee after a sexual advance is refused. If no such action is taken, an employer may raise a defense to strict liability by showing that it exercised reasonable care to prevent and promptly correct any sexually harassing behavior and that the employee failed to take advantage of any preventive or corrective opportunities provided by the employer to otherwise avoid harm. The *Faragher* case was brought under Title VII of the Civil Rights Act of 1964.

Faragher worked as a part-time lifeguard for Boca Raton from 1985 to 1990. She claimed, and a Federal judge agreed, that she was harassed during that time after being subjected to repeated touching and improper sexual comments by her supervisors. Boca Raton had a policy against sexual harassment, but the supervisors were not aware of it because the policy was not disseminated to their workplace. Faragher subsequently complained about her supervisors' conduct to a training captain at the lifeguard station. Later, another female lifeguard informed the director of personnel for the city about the supervisors' behavior.

Under the strict-liability standard accepted by the court in *Faragher*, employers are held liable for supervisors' sexual harassment, irrespective of whether the employers were informed that the harassment took place. In contrast, a negligence standard—which several circuit courts had adopted, but which ultimately was rejected by the High Court—would have required plaintiffs to show only that employers knew or should have known that their supervisors were engaging in sexual harassment before liability could be established.

In *Meritor*, the Supreme Court had indicated that questions of employer liability for sexual harassment should be evaluated under traditional principles of agency law. Under agency theory, employers can be held liable for actions of employees if the actions fall within the scope of a supervisor's job duties. The Court clarified this analysis in the *Faragher* opinion, saying that, in a sense, supervisors would always be assisted in sexual misconduct by the supervisory relationship. The *Faragher* Court noted, however, that employers should not automatically be held liable whenever a supervisor com-

"The Law at Work" is prepared by Charles J. Muhl of the Office of Publications, Bureau of Labor Statistics, and is largely based on information from secondary sources.

mits harassment.

Under the Court's enunciated sexual harassment standard in *Faragher*, Boca Raton was held liable for sexual harassment by city supervisors of the two female lifeguards. The Court found that the supervisors' behavior created a hostile work environment and that the supervisors had almost limitless authority over their employees. Furthermore, the city could not raise an affirmative defense to the liability, because it failed to disseminate its sexual harassment policy among beach employees and no attempt was made to watch over the conduct of supervisors. Thus, the city did not exercise reasonable care to prevent the supervisors' harassing conduct.

The Court's holding in *Faragher* overruled the eleventh circuit U.S. Court of Appeals, which held in a 7–5 decision that the city was not liable because it was unaware that the sexual harassment had taken place. The eleventh circuit argued that the supervisors were not aided by their agency relationship in accomplishing their harassment.

The *Faragher* standard also was applied by the High Court in *Burlington Industries, Inc.* v. *Ellerth*[8] to determine whether employees who neither submit to a supervisor's sexual demands nor suffer any tangible adverse job consequences may still sue for quid pro quo sexual harassment under Title VII. Although an exact definition of "quid pro quo" is difficult to enunciate, in the sexual harassment context the locution refers to a situation in which a supervisor makes a sexual advance and offers improvements in working conditions if it is accepted.

Ellerth was promoted about 1 year into the job. Burlington had a policy against sexual harassment at work, and Ellerth knew the policy, but she did not complain about her supervisor's alleged harassment. In a 6–5 decision, the seventh circuit ruled that Ellerth could proceed with her claim.

The Supreme Court held in *Ellerth* that an employee may recover damages from an employer for sexual harassment even if a supervisor's sexual demands go empty or unfulfilled or if no demotion, loss of pay, or termination results from failure to submit to sexual advances. Because the strict-liability standard of *Faragher* applies here as well, the employee is not required to show that the employer was negligent or otherwise at fault for the supervisor's harassment. However, employers may defend against such a claim by demonstrating a reasonable response to the harassment accusation or showing that the employee did not make use of procedures in place to address such complaints (the procedure outlined in *Faragher*). The Court also said that the distinction many Federal courts had used between quid pro quo and hostile work environment sexual harassment cases to determine whether employers were strictly liable was of limited utility.

Finally, in *Gebser* v. *Lago Vista Independent School District*,[9] the Court ruled that a plaintiff may not recover damages for teacher-student sexual harassment, unless a school district official who has the authority to institute corrective measures on the district's behalf has actual notice of, and is deliberately indifferent to, the teacher's misconduct. The ruling applies to private actions brought under Title IX of the Education Amendments of 1972.

Gebser was a high school student in the Lago Vista Independent School District. She had an affair with one of her teachers, who was arrested and subsequently fired from his job when the two were found together having sex. Later, the student sued the school district, seeking damages for the teacher's misconduct.

Health care coverage

The Supreme Court has ruled that an employer cannot cancel a former employee's medical coverage under the Comprehensive Omnibus Budget Reconciliation Act (COBRA), even if the former worker is covered under a spouse's health plan when separated from employment. As a result of the holding, a former employee may choose to continue health care coverage provided by his or her previous employer if coverage under the spouse's health plan was in effect before the decision to continue health care coverage under COBRA is made.

COBRA requires employers to provide a "qualified beneficiary" (for example, an employee who was fired) with continuation of health care coverage as good as the coverage the employee received while employed. The continuation of coverage can last up to 18 months; the former employee pays the health care insurance premiums.

In *Geissal* v. *Moore Medical Corp.*,[10] the plaintiff, James Geissal, was covered by both his employer's self-funded health insurance plan and his wife's group health plan at the time he was fired. Geissal preferred to be covered by his former employer's plan, provided by the Moore Medical Group, rather than his wife's plan. Six months following his election of the Moore Group plan, the group terminated his coverage because he was covered by his wife's plan.

The statutory language of COBRA[11] clearly indicates that a former employee ceases to be eligible for coverage under the Act if the employee becomes covered under a different plan *after* the election of COBRA benefits. Section 1162(2)(D)(i) states that an employee's COBRA insurance may be canceled on "the date on which the qualified beneficiary first becomes, *after the date of the election*[12] [to continue coverage from a former employer], covered under any other group health plan which does not contain any exclusion or limitation with respect to any pre-existing conditions of such beneficiary. . . ." However, the language does not directly address whether a former employee who was covered by another plan *before* electing to continue coverage from the former employer (that is, while the former employee was still employed) is ineligible for COBRA benefits.

The Court interpreted the statute according to its plain meaning, accepting Geissal's position, supported by attor-

neys for the Federal Government in oral argument, that the date of election of coverage was critical. Thus, COBRA benefits cease only when a former employee first becomes covered *after* the date of election, not when the employee becomes covered by a spouse's plan *before* the date of election. The Court noted that, because COBRA beneficiaries must pay the premiums if they elect to continue coverage, its decision does not provide them with a "windfall." Furthermore, the Court agreed with Government attorneys who argued that Congress intended to give employees the choice of which coverage to continue.

The Court rejected the "significant gap test" adopted by some circuit courts. Under that test, a former employee was able to continue coverage under COBRA when he or she was covered by another group plan only if a "significant gap" in coverage existed between the two plans. A health plan administrator or court, rather than the employee, determined whether such a gap in coverage existed. In rejecting this approach, the High Court cited the lack of statutory support for it, as well as the impermissible level of judicial intrusion into a decision that Congress intended to be left to the former employee.

Previously, circuit courts had split on the issue of coverage. The eighth circuit in *Geissal*[13] ruled that the plaintiff could not continue to receive COBRA benefits if he or she was covered by another group plan prior to electing coverage under COBRA, subject to the "significant gap test." The eighth circuit's decision mirrored that of the eleventh circuit in *National Companies Health Benefits Plan* v. *St. Joseph's Hospital, Inc.*,[14] which had introduced the "significant gap test." Unlike the Supreme Court, the eleventh circuit interpreted congressional motives regarding the passage of COBRA as wanting to ensure that employees could receive group health insurance at reasonable cost when they left a job. In contrast to the eighth and eleventh circuits, the tenth[15] and seventh[16] circuits ruled that Congress intended to permit employees to preserve their health insurance as is under COBRA, meaning that the choice of which plan to use should be left to the employee. The Supreme Court's decision resolves the conflict between the various circuit courts.

Medical tests

What kind of medical tests may employers legally perform on blood and urine samples submitted by their employees? The U.S. Court of Appeals for the ninth circuit recently ruled that the University of California violated employees' rights by testing workers for genetic disorders, venereal disease, and pregnancy without their consent. In *Norman-Bloodsaw* v. *Lawrence Berkeley Laboratory*,[17] the court held that employees could go forward with a lawsuit filed against the national research laboratory run by the university, alleging a violation of Title VII of the 1964 Civil Rights Act.

The Court's holding, which focused on the fact that the employees did not give their consent to the university laboratory, indicated that employers do not have unlimited power to conduct any tests they wish. The court reasoned that a simple submission of a blood or urine sample does not put employees on notice that an employer will perform any and all tests, irrespective of their invasiveness, especially when the employer provides no concrete justification for conducting the tests. Even though employees were asked questions on a medical form about venereal disease, sickle-cell anemia, and menstrual disorders, the employees did not have reason to expect further intrusive tests. The court distinguished between answering questions about one's health and consenting to an investigation into the most intimate aspects of a person's life.

Employers located in the ninth circuit (Arizona, California, Idaho, Montana, Nevada, Oregon, and Washington) who wish to conduct medical tests should provide explicit notice of the tests and seek informed consent from the employees they wish to test. Furthermore, the tests should have a reasonable medical or public health justification. □

Footnotes

[1] 477 U.S. 57 (1986).
[2] 510 U.S. 17 (1993).
[3] 118 S.Ct. 998 (1998).
[4] *Ibid.*
[5] *Ibid.*
[6] *Ibid.*
[7] 118 S.Ct. 438 (1998). See also 76 F.3d 1155 (1996).
[8] 118 S.Ct. 876 (1998). See also 123 F.3d 490 (1997).
[9] 118 S.Ct. 595 (1998). See also 106 F.3d 1223 (1997).
[10] 1998 WL 292075. For overruled Eighth Circuit's opinion, see 114 F.3d 1458 (1997).
[11] 29 U.S.C. 1162 (1998) (Continuation Coverage and Additional Standards for Group Health Plans). See Section (2)(D)(i).
[12] My italics.
[13] 114 F.3d 1458 (8th Cir. 1997).
[14] 929 F.2d 1558 (11th Cir. 1991).
[15] *Oakley* v. *City of Longmont*, 890 F.2d 1128 (10th Cir. 1989).
[16] *Lutheran Hospital of Indiana, Inc.* v. *Business Men's Assurance Co. of America*, 51 F.3d 1308 (7th Cir. 1995).
[17] 135 F.3d 1260 (1998).

Where are computers most productive?

Manufacturing industries that use computers most intensively benefit most from the computer revolution, according to a Conference Board economic research report by Robert H. McGuckin and Kevin J. Stiroh. A 17-percent drop per year in the price of computing power has led to a pervasive substitution of input toward computers across almost all sectors of the economy.

Eight sectors—five in manufacturing and three in services—have made especially intensive use of computers. In the factory sector, the heavy computer users (nonelectrical machinery; electrical machinery; printing and publishing; instruments; and stone, clay, and glass) showed average labor productivity growth rates of 5.7 percent per year in the 1990s, roughly double the average growth in productivity in manufacturing industries that had not computerized to the same degree. The computer-intensive industries in the service sector (trade; other services; and finance, insurance and real estate) showed no such productivity premium. In both computer-using and noncomputer-using industries among service producers, productivity increased at rates just under 1 percent per year from 1990 to 1996.

Children and labor supply

Analyzing the extremely complex decisions to bear children and to join the labor force have not been made easier by the fact that the two decisions are theoretically and empirically made jointly. Joshua D. Angrist and William N. Evans, writing in *American Economic Review*, attempt to work around this difficulty by examining the impact of what they describe as "plausibly exogenous sources of variation in family size," basically, additional children conceived to achieve a desired mix of sexes among the family's children.

One of their conclusions confirms the usual finding that children tend to reduce the amount of labor supplied to the market by their mothers. More advanced econometric techniques tend to yield smaller, but still notable, estimates of this impact. More surprising to Angrist and Evans is that their more sophisticated estimates of the effects of children on labor supply are "much smaller and possibly even absent among college-educated women and women whose husbands have high wages." This, it seems, contradicts some theories of household time allocation.

Angrist and Evans found very little response to changes in family size in the labor market behavior of husbands: "In spite of the increase in women's wages and labor force participation rates ..., the labor market behavior of most married men appears to have remained largely insensitive to the number of children." Even in cases where more children led to more time spent by fathers caring for children, this was usually done at the expense of his leisure time rather than his work.

A new labor supply regime?

The usual litany of structural changes—globalization, deregulation, weakening labor unions, downsizing, and a greater sense of job insecurity—cause economists Barry Bluestone and Stephen Rose to suggest that there has been "a fundamental shift in the Nation's labor supply regime." They hypothesize in a Jerome Levy Economics Institute *Public Policy Brief* that employers today do not have to raise wages to attract new workers into the labor supply because additional labor demand can be met by offering longer workweeks or moonlight jobs to existing employees.

They note that this is very different from the labor market of the 1970s in which additional workers had to be coaxed into the labor force. Historically, Bluestone and Rose assert, bringing a new worker into the labor market has required offering higher wages than those needed to encourage current workers to extend their working hours.

A new output variability regime?

A time series analysis of the quarter-to-quarter volatility of U.S. output suggests to Margaret M. McConnell and Gabriel Perez Quiros that there was a structural break in the volatility of gross domestic product (GDP) growth in the United States in the early 1980s. In technical terms, their Federal Reserve Bank of New York staff paper, *Output Fluctuations in the United States: What Has Changed Since the Early 1980s?*, shows "that a regime switching model of output growth fails to capture a business cycle signal [of the 1990–91 recession] when the model is augmented to allow both the mean and the variance of output to switch between States. To explain the absence of a business cycle signal, we appeal to the dominant effect of a one-time decline in the variance of GDP growth in the early 1980s...."

The authors go on to provide evidence that the structural break is related to a reduction in the variability of durable goods production and that the reduction in durables volatility corresponds to a decline in the share of durable goods production accounted for by inventories. □

To the Editors:

I was pleased to see the clear explanation in the box entitled "Reconciling differences in employment estimates from the Current Population Survey (Household Survey) and the Current Employment Statistics Survey (Establishment Survey)" in the article by Randy E. Ilg and Angela Clinton in the February 1998 *Monthly Labor Review.* As someone who has to constantly repeat that litany, I am pleased to be able to refer skeptics to the box.

However, there is a serious omission from the box. From my standpoint, I am pleased to see that you recognized that commuters from Canada and Mexico are included in the Current Employment Statistics (CES) Survey but not in the Current Population Survey (CPS). I have done a survey of border crossers for the ports of entry in San Diego and Imperial Counties and know there are commuters who reside in California (United States) and work in Baja California (Mexico). For the San Diego/Tijuana ports of entry, we found approximately 35,000 commuters who legally work in California and 10,000 commuters to Baja California in 1992. While your box takes the former into account, I will still have to explain that the commuters from California to Baja California are included in the CPS but not in the CES.

Sincerely,
[signed] Millicent Cox, Ph.D
San Diego, California

Mr. Ilg and Ms. Clinton reply:

Taking into account the persons who live in the United States (and thus represented in the Current Population Survey) but who work in a neighboring country (and thus in jobs that are not counted in the Current Employment Statistics Survey) does complete the logic of the reconciliation exercise. The number of people involved may be considerably smaller than your border crossing data suggest, however. According to the 1990 Census data on the journey to work (unfortunately, the latest available), 7,247 U.S. residents worked in Mexico for the bulk of the 1990 census reference week. Of these, more than half were from Texas, a quarter were from California, and 7.1 percent were from Arizona. An additional 4,668 American residents were working in Canada.

Labor unions today

Epitaph for American Labor: How Union Leaders Lost Touch with America. By Max Green, Washington, The AEI Press, 1996, 207 pp. $24.95.

It is the brave and stalwart contention that American labor organizations are in decline and that the trend "is destined to continue." These are hardly pioneering concepts, but the author brings to bear noteworthy credentials for a commentary on the labor movement in America. He was for many years a staunch supporter of the AFL-CIO, an official of the teachers union in New York City, a functionary of the U.S. Commission on Civil Rights, and had other assignments in public policy posts.

His thesis is presaged by a number of labor practitioners and theoreticians, all in the 1960s. Among these are Clark Kerr in *Labor and Management in Industrial Society;* John Kenneth Galbraith in *The New Industrial State*; Solomon Barkin in *The Decline of the Labor Movement*; and George W. Taylor in *Collective Bargaining in Transition.* But none of these utters his conclusions in such morbid terms or is so willing to pronounce a death sentence. In essence, they point out that the economy and consequential social and political institutions have evolved, necessitating a concatenation of labor organizations and their functions, along with the methods of dispute resolution.

The author approaches such fundamental movements so tangentially that one must search and search for helpful allusions to them, and then only via isolated quotations from individuals.

—Lawrence R. Klein
Former Editor-in-Chief
Monthly Labor Review

Retirees' expenses

Expenditures of Older Americans. By Rose M. Rubin and Michael L. Nieswiadomy. Westport, CT, Praeger Publishers, 1997, 153 pp. $55.

In their book *Expenditures of Older Americans*, Rose M. Rubin and Michael L. Nieswiadomy explore a variety of issues, ranging from the descriptive (characteristics of older Americans) to the predictive (trends and the future). They consider how expenditure patterns change with age, the effect of retirement on expenditures, how vulnerable older consumers are to poverty, and issues related to health expenditures. Many of these analyses are performed using data from the U.S. Bureau of Labor Statistics Consumer Expenditure Interview Survey, the most detailed source of consumer expenditure data collected by the U.S. Government.

The authors provide compelling statistics supporting their claim that the aging population is an issue of increasing importance socially, culturally, and economically. For example, they provide projections from the U.S. Bureau of the Census showing that in 2050, persons who are at least 85 years old will comprise almost 5 percent of the U.S. population. Sometime between 1920 and 1930, it took all persons over the age of 65 to account for this proportion, and those over age 85 were less than 0.5 percent of the population. The same table predicts that in 2000, those over age 65 will account for 1 in 8 Americans; but by 2050, they will account for 1 in 5 Americans. The oldest group (over age 85) is predicted to have the fastest growth rate, nearly tripling its population proportion over the 2000 (1.6 percent) to 2050 (4.6 percent) period. Slower growth is projected for those aged 75 to 84 (5 to 7 percent), and 65 to 74 (7 to 9 percent).

The aging of the population will have clear implications for U.S. taxpayers, and may indirectly affect all Americans. For example, the medicare program, designed to provide health insurance coverage for those age 65 and older, will experience a new influx of subscribers. The health care industry in general will face increased demand for everything from prescription medicines to hospital beds, not to mention gerontologists. Similarly, Social Security will cover a far larger percentage of the population than it has historically; when the Social Security Act was signed into law in 1935, less than half the working population even reached the age of 65. In 1940, of those who did reach this age, only 7 percent—about 1 in 15 persons—were expected to live to age 90. By 1992, that figure increased to 25 percent—a full 1 in 4 persons—of those age 65 that could expect to live to age 90, presumably, thanks to advances in medical and nutritional sciences.

Other studies have shown that older consumers have different tastes and preferences than younger consumers for goods and services such as apparel, food away from home, and entertainment. By itself, this is important information, especially as older persons become more numerous. However, the authors show that in many cases, tastes and preferences of this group have changed over time, reflecting changes in tax laws and other economic and social conditions. Examining retired households over age 50, the authors find important changes in tastes for the goods just mentioned, as well as for other goods, including transportation, housing, and gifts and contributions. Consumer spending, then, will be increasingly influenced by older consumers due both to their increasing numbers and changing tastes.

The authors address other areas of concern as well. For example, the living arrangements for older consumers have changed over time. More and more, older Americans are self-reliant, living alone or with a spouse, rather than with relatives. This is most noticeable for those who are at least 75 years old, especially women. In 1960, only 26 percent of women over age 75 lived alone. By 1994, that figure doubled to 52 percent of these women. Over that same period, the proportions living with relatives dropped from 46 percent to 20 percent. The reader is left to ponder whether these changes are for better or worse. On the one hand, these figures may indicate positive economic trends—perhaps so-

cial changes have allowed older women today more opportunities over their lifetimes to acquire assets for their golden years. On the other hand, perhaps social changes have worked in other ways; for example, decreasing family sizes may mean that more older women have no children or other close relatives with whom they can live out their final years. The authors suggest they will answer this question in chapter 5, where vulnerability is discussed. However, they leave the reader only with the teasing information that while nominal incomes rose faster for older Americans between 1980 and 1993 (106 percent, compared with 97 percent, for the total population), those older Americans who have incomes above the poverty line are more likely to be considered "near poor" (that is, with incomes between 100 and 125 percent of the poverty line) than younger Americans. Further, about 1 in 5 of all near-poor Americans are over age 65, compared with 1 in 8 of all Americans who are over age 65.

Nevertheless, *Expenditures of Older Americans* is quite informative. One of the book's strengths is that it includes lengthy segments from previously published articles, providing convenience for the researcher by compiling them in one place. This book would be useful to anyone with an interest in studying the older segment of the population. However, the reader should be aware that some of the materials require familiarity with statistical and econometric techniques for a full appreciation of the work.

—Geoffrey D. Paulin

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Specialty production

Endless Novelty: Specialty Production and American Industrialization, 1865–1925. By Philip Scranton. Princeton, Princeton University Press, 1997, 415 pp. $39.50.

All social scientists like to think of themselves as objective observers, unaffected by popular trends. Inevitably, all of us are products of our times and our view of the past can be clouded by the present. Historians who worked in the 1950s and 1960s witnessed the success of the massive industrial buildup of World War II and the consumer explosion that occurred with the end of World War II. Seeing the success of mass production in their present situation, they taught generations of managers that mass production was the engine of the American economy since the Civil War and the very essence of the Industrial Revolution.

Today, technology is giving us new tools and the ability to produce what is now commonly referred to as mass customization of products. Henry Ford's philosophy, defined by the slogan, "any color car as long as it is black," is being redefined for American industry. Demanding consumers expect products that more closely fit their needs, both manufactured goods and services.

It is fitting that historians are now reexamining the nature of American industrial growth from the mid-19th century to our own times. *Endless Novelty* is a serious attempt to recognize that mass production was only one type of successful model during that period. Dr. Scranton divides all of American industry into four groups: custom, batch, bulk, and mass production. Both large and small firms fit into each of these four categories, and each category contained business successes and failures. Custom industries are those which produce products only upon specific orders from customers, such as large turbines and special-order furniture. Batch industries aggregate orders and then produce items based on those accumulated requests, including such industries as machine tools and specialty chemicals. The amount of a product produced depends on the orders in hand.

Bulk producers manufacture relatively technically simple items such as hardware or clothing. They make large quantities of goods at a time and often compete on price, rather than on uniqueness. Mass producers also generate large production runs, but they invest heavily in technology and must sell large quantities of items to justify the capital costs, such as automobiles and oil-refining. Since the book's focus is on specialty production, most of the book examine companies engaged in custom and batch production.

The book gives a balanced view of the successes and failures of the specialty model by examining a number of different industries over 60 years. There are separate chapters on the textile industry in Philadelphia, machine tools in Cincinnati, the jewelry industry in Providence, and furniture manufacturing in Grand Rapids. While each of these industries occurred in various locations across the United States, part of Dr. Scranton's thesis is that individual industries prospered in certain industrial centers. These clustered industries could obtain skilled labor and auxiliary firms that supported their particular industry by locating close to each other, similar to the current situation for computer technology in today's Silicon Valley.

Separately, each specialty industry strove to prosper by innovations and control of the marketplace. Owners in various industrial sectors shared common problems of developing profitable pricing strategies, threats and opportunities from imports and exports, continual attention to the growth of their customer base, and management and training of their work force.

Specialty firms needed work force skills that could respond to varying customer orders. The organization of work by large mass production industries did not adequately meet the needs of specialty producers. Frederick Taylor's "scientific management" approach organized work on the assumption that it could be measured and made more efficient. It is interesting that specialty firms with their varied products and variable flow of orders found this system inadequate and, in fact, counterproductive to their needs. On a continually flowing assembly line, workers can specialize in one task and that in-

flexible task can be studied and reduced to its simplest form. Where flexibility is important and workers need to have varied skills to meet continually varying production requirements, skill is more important than efficiency and workers with a large number of skills are both costlier to firms and more valuable to them. Pay plans are more difficult to develop in specialty firms where the employee is required to perform multiple tasks over varied times on a continually changing product mix. In those circumstances, measurement becomes less objective and production-based incentive pay plans more difficult to implement and maintain.

At the end of the book, the reader feels enlightened but still with questions. Why did mass production techniques become so accepted since they applied to only a part of the industry? If scientific management did not work at specialty firms, how did this way of organizing work become the model of firms in a variety of industries? Why didn't specialty industries develop an alternative to scientific management? Why did specialty firms continue to implement scientific management even though it was inadequate for their needs?

The book also leaves unanswered questions about the economics of regional centers. If industrial centers were so important to specialty industries, why did the centers eventually decline? It is understandable that regional centers suffered when their major industry went into decline, such as jewelry making in Providence. On the other hand, some industries continued to prosper but abandoned their traditional industrial center. Furniture manufacturing continues in Grand Rapids but much of the furniture is now produced in the South, and Grand Rapids firms no longer enjoy the control of the market that existed only 100 years ago. Similarly, Philadelphia went into a period of long decline and is no longer thought of as the major textile center in this country, although the textile industry continued to grow long after Philadelphia firms had lost their leadership in the market. if industrial centers are important to specialty industries, why do they suffer a greater decline than their industry? Is this the fate of Silicon Valley in the future?

Endless Novelty is a good introduction to a part of the American economy that has been overlooked for too long and contains lessons useful to economists looking for new models or organization. From software development to advertising, many establishments both in manufacturing and service sectors still can be classified as specialty industries. Economists looking at these new economic engines would do well to study their economic ancestors.

—Michael Wald

Bureau of Labor Statistics
Atlanta region

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This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics: series on labor force; employment; unemployment; labor compensation; consumer, producer, and international prices; productivity; international comparisons; and injury and illness statistics. In the notes that follow, the data in each group of tables are briefly described; key definitions are given; notes on the data are set forth; and sources of additional information are cited.

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted data appear in tables 1–14, 16–17, 39, and 43. Seasonally adjusted labor force data in tables 1 and 4–9 were revised in the February 1998 issue of the *Review*. Seasonally adjusted establishment survey data shown in tables 1, 12–14 and 16–17 were revised in the July 1997 *Review* and reflect the experience through March 1997. A brief explanation of the seasonal adjustment methodology appears in "Notes on the data."

Revisions in the productivity data in table 45 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month-to-month and quarter-to-quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All-Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the "real" earnings shown in table 14—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current-dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1982 = 100, the hourly rate expressed in 1982 dollars is $2 ($3/150 x 100 = $2). The $2 (or any other resulting values) are described as "real," "constant," or "1982" dollars.

Sources of information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. Definitions of each series and notes on the data are contained in later sections of these Notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Bulletin 2490. Users also may wish to consult *Major Programs of the Bureau of Labor Statistics*, Report 919. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule appearing on the back cover of this issue.

More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in the Bureau's monthly publication, *Employment and Earnings*. Historical unadjusted and seasonally adjusted data from the household survey are available on the Internet:

http://stats.bls.gov/cgi-bin/dsrv?lf

Historically comparable unadjusted and seasonally adjusted data from the establishment survey also are available on the Internet:

http://stats.bls.gov/cgi-bin/dsrv?ee

Additional information on labor force data for sub-States are provided in the BLS annual report, *Geographic Profile of Employment and Unemployment.*

For a comprehensive discussion of the Employment Cost Index, see *Employment Cost Indexes and Levels, 1975–95*, BLS Bulletin 2466. The most recent data from the Employee Benefits Survey appear in the following Bureau of Labor Statistics bulletins: *Employee Benefits in Medium and Large Firms; Employee Benefits in Small Private Establishments;* and *Employee Benefits in State and Local Governments*.

More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report* and *Producer Price Indexes*. For an overview of the 1998 revision of the CPI , see the December 1996 issue of the *Monthly Labor Review*. Additional data on international prices appear in monthly news releases.

For a listing of available industry productivity indexes and their components, see *Productivity Measures for Selected Industries*, BLS Bulletin 2491.

For additional information on international comparisons data, see *International Comparisons of Unemployment*, BLS Bulletin 1979.

Detailed data on the occupational injury and illness series are published in *Occupational Injuries and Illnesses in the United States, by Industry*, a BLS annual bulletin.

Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

n.e.c. = not elsewhere classified.
n.e.s. = not elsewhere specified.
p = preliminary. To increase the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.
r = revised. Generally, this revision reflects the availability of later data, but also may reflect other adjustments.

Comparative Indicators

(Tables 1–3)

Comparative indicators tables provide an overview and comparison of major BLS statistical series. Consequently, although many of the included series are available monthly, all measures in these comparative tables are presented quarterly and annually.

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-to-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonfarm payroll data. The Employment Cost Index (compensation), by major sector and by bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

Data on **changes in compensation, prices, and productivity** are presented in table 2.

Measures of rates of change of compensation and wages from the Employment Cost Index program are provided for all civilian nonfarm workers (excluding Federal and household workers) and for all private nonfarm workers. Measures of changes in consumer prices for all urban consumers; producer prices by stage of processing; overall prices by stage of processing; and overall export and import price indexes are given. Measures of productivity (output per hour of all persons) are provided for major sectors.

Alternative measures of wage and compensation rates of change, which reflect the overall trend in labor costs, are summarized in table 3. Differences in concepts and scope, related to the specific purposes of the series, contribute to the variation in changes among the individual measures.

Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data.

Employment and Unemployment Data

(Tables 1; 4–20)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 50,000 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

Employed persons include (1) all those who worked for pay any time during the week which includes the 12th day of the month or who worked unpaid for 15 hours or more in a family-operated enterprise and (2) those who were temporarily absent from their regular jobs because of illness, vacation, industrial dispute, or similar reasons. A person working at more than one job is counted only in the job at which he or she worked the greatest number of hours.

Unemployed persons are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff are also counted among the unemployed. **The unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **civilian labor force** consists of all employed or unemployed persons in the civilian noninstitutional population. Persons **not in the labor force** are those not classified as employed or unemployed. This group includes discouraged workers, defined as persons who want and are available for a job and who have looked for work sometime in the the past 12 months (or since the end of their last job if they held one within the past 12 months), but are not currently looking, because they believe there are no jobs available or there are none for which they would qualify. The **civilian noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy. The **civilian labor force participation** rate is the proportion of the civilian noninstitutional population that is in the labor force. The **employment-population ratio** is employment as a percent of the civilian noninstitutional population.

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the intercensal years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on the various data series appears in the Explanatory Notes of *Employment and Earnings*.

Labor force data in tables 1 and 4–9 are seasonally adjusted. Since January 1980, national labor force data have been seasonally adjusted with a procedure called X-11 ARIMA which was developed at Statistics Canada as an extension of the standard X-11 method previously used by BLS. A detailed description of the procedure appears in the X-11 *ARIMA Seasonal Adjustment Method,* by Estela Bee Dagum (Statistics Canada, Catalogue No. 12-564E, January 1983).

At the end of each calendar year, historical seasonally adjusted data usually are revised, and projected seasonal adjustment factors are calculated for use during the January–June period. Because of the redesign of the survey, seasonally adjusted data back to 1994 usually are revised. In July, new seasonal adjustment factors, which incorporate the experience through June, are produced for the July–December period, but no revisions are made in the historical data.

Revisions to household data

Data beginning in 1998 are not strictly comparable with data for 1997 and earlier years because of the introduction of new composite estimation procedures and updated population controls. Additional information on these revisions appears in the February 1998 issue of *Employment and Earnings*.

FOR ADDITIONAL INFORMATION on national household survey data, contact the Division of Labor Force Statistics: (202) 606–6378.

Establishment survey data

Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by about 390,000 establishments representing all industries except agriculture. Industries are classified in accordance with the 1987 *Standard Industrial Classification (SIC) Manual.* In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

An **establishment** is an economic unit which produces goods or services (such as a factory or store) at a single location and is engaged in one type of economic activity.

Employed persons are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th day of the month. Persons holding more than one job (about 5 percent of all persons in the labor force) are counted in each establishment which reports them.

Production workers in manufacturing include working supervisors and nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 11–16 include production workers in manufacturing and mining; construction

workers in construction; and nonsupervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Hours represent the average weekly hours of production or nonsupervisory workers for which pay was received, and are different from standard or scheduled hours. **Overtime hours** represent the portion of average weekly hours which was in excess of regular hours and for which overtime premiums were paid.

The **Diffusion Index** represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Data are centered within the span. Table 17 provides an index on private nonfarm employment based on 356 industries, and a manufacturing index based on 139 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

Notes on the data

Establishment survey data are annually adjusted to comprehensive counts of employment (called "benchmarks"). The latest adjustment, which incorporated March 1996 benchmarks, was made with the release of May 1997 data, published in the July 1997 issue of the *Review*. Coincident with the benchmark adjustment, seasonally adjusted data were revised back to 1988 to reflect updated seasonal factors and seasonal adjustment procedures. Unadjusted data from April 1996 forward and seasonally adjusted data from January 1993 forward are subject to revision in future benchmarks.

Revisions in State data (table 11) occurred with the publication of January 1998 data.

Beginning in June 1996, the BLS uses the X-12 ARIMA methodology to seasonally adjust establishment survey data. This procedure, developed by the Bureau of the Census, controls for the effect of varying survey intervals (also known as the 4- versus 5-week effect), thereby providing improved measurement of over-the-month changes and underlying economic trends. Revisions of data, usually for the most recent 5-year period, are made once a year coincident with the benchmark revisions.

In the establishment survey, estimates for the most recent 2 months are based on incomplete returns and are published as preliminary in the tables (12–17 in the *Review*). When all returns have been received, the estimates are revised and published as "final" (prior to any benchmark revisions) in the third month of their appearance. Thus, December data are published as preliminary in January and February and as final in March. For the same reasons, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, fourth-quarter data are published as preliminary in January and February and as final in March.

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9–20.

FOR ADDITIONAL INFORMATION on establishment survey data, contact the Division of Monthly Industry Employment Statistics: (202) 606–6555.

Unemployment data by State

Description of the series

Data presented in this section are obtained from the Local Area Unemployment Statistics (LAUS) program, which is conducted in cooperation with State employment security agencies.

Monthly estimates of the labor force, employment, and unemployment for States and sub-State areas are a key indicator of local economic conditions, and form the basis for determining the eligibility of an area for benefits under Federal economic assistance programs such as the Job Training Partnership Act. Seasonally adjusted unemployment rates are presented in table 10. Insofar as possible, the concepts and definitions underlying these data are those used in the national estimates obtained from the CPS.

Notes on the data

Data refer to State of residence. Monthly data for all States and the District of Columbia are derived using standardized procedures established by BLS. Once a year, estimates are revised to new population controls, usually with publication of January estimates, and benchmarked to annual average CPS levels.

FOR ADDITIONAL INFORMATION on data in this series, call (202) 606–6392 (table 10) or (202) 606–6589 (table 11).

Compensation and Wage Data

(Tables 1–3; 21–27)

COMPENSATION AND WAGE DATA are gathered by the Bureau from business establishments, State and local governments, labor unions, collective bargaining agreements on file with the Bureau, and secondary sources.

Employment Cost Index

Description of the series

The **Employment Cost Index** (ECI) is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor.

Statistical series on total compensation costs, on wages and salaries, and on benefit costs are available for private nonfarm workers excluding proprietors, the self-employed, and household workers. The total compensation costs and wages and salaries series are also available for State and local government workers and for the civilian nonfarm economy, which consists of private industry and State and local government workers combined. Federal workers are excluded.

The Employment Cost Index probability sample consists of about 4,400 private nonfarm establishments providing about 23,000 occupational observations and 1,000 State and local government establishments providing 6,000 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

Beginning with June 1986 data, fixed employment weights from the 1980 Census of Population are used each quarter to calculate the civilian and private indexes and the index for State and local governments. (Prior to June 1986, the employment weights are from the 1970 Census of Population.) These fixed weights, also used to derive all of the industry and occupation series indexes, ensure that changes in these indexes reflect only changes in compensa-

tion, not employment shifts among industries or occupations with different levels of wages and compensation. For the bargaining status, region, and metropolitan/nonmetropolitan area series, however, employment data by industry and occupation are not available from the census. Instead, the 1980 employment weights are reallocated within these series each quarter based on the current sample. Therefore, these indexes are not strictly comparable to those for the aggregate, industry, and occupation series.

Definitions

Total compensation costs include wages, salaries, and the employer's costs for employee benefits.

Wages and salaries consist of earnings before payroll deductions, including production bonuses, incentive earnings, commissions, and cost-of-living adjustments.

Benefits include the cost to employers for paid leave, supplemental pay (including nonproduction bonuses), insurance, retirement and savings plans, and legally required benefits (such as Social Security, workers' compensation, and unemployment insurance).

Excluded from wages and salaries and employee benefits are such items as payment-in-kind, free room and board, and tips.

Notes on the data

The Employment Cost Index for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series of changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981=100) are available on the Internet:

http://stats.bls.gov/ecthome.htm

FOR ADDITIONAL INFORMATION on the Employment Cost Index, contact the Office of Compensation Levels and Trends: (202) 606–6199.

Employee Benefits Survey

Description of the series

Employee benefits data are obtained from the Employee Benefits Survey, an annual survey of the incidence and provisions of selected benefits provided by employers. The survey collects data from a sample of approximately 6,000 private sector and State and local government establishments. The data are presented as a percentage of employees who participate in a certain benefit, or as an average benefit provision (for example, the average number of paid holidays provided to employees per year). Selected data from the survey are presented in table 25 for medium and large private establishments and in table 26 for small private establishments and State and local government.

The survey covers paid leave benefits such as lunch and rest periods, holidays and vacations, and personal, funeral, jury duty, military, parental, and sick leave; sickness and accident, long-term disability, and life insurance; medical, dental, and vision care plans; defined benefit and defined contribution plans; flexible benefits plans; reimbursement accounts; and unpaid parental leave.

Also, data are tabulated on the incidence of several other benefits, such as severance pay, child-care assistance, wellness programs, and employee assistance programs.

Definitions

Employer-provided benefits are benefits that are financed either wholly or partly by the employer. They may be sponsored by a union or other third party, as long as there is some employer financing. However, some benefits that are fully paid for by the employee also are included. For example, long-term care insurance and postretirement life insurance paid entirely by the employee are included because the guarantee of insurability and availability at group premium rates are considered a benefit.

Participants are workers who are covered by a benefit, whether or not they use that benefit. If the benefit plan is financed wholly by employers and requires employees to complete a minimum length of service for eligibility, the workers are considered participants whether or not they have met the requirement. If workers are required to contribute towards the cost of a plan, they are considered participants only if they elect the plan and agree to make the required contributions.

Defined benefit pension plans use predetermined formulas to calculate a retirement benefit, and obligate the employer to provide those benefits. Benefits are generally based on salary, years of service, or both.

Defined contribution plans generally specify the level of employer and employee contributions to a plan, but not the formula for determining eventual benefits. Instead, individual accounts are set up for participants, and benefits are based on amounts credited to these accounts.

Tax-deferred savings plans are a type of defined contribution plan that allow participants to contribute a portion of their salary to an employer-sponsored plan and defer income taxes until withdrawal.

Flexible benefit plans allow employees to choose among several benefits, such as life insurance, medical care, and vacation days, and among several levels of care within a given benefit.

Notes on the data

Surveys of employees in medium and large establishments conducted over the 1979–86 period included establishments that employed at least 50, 100, or 250 workers, depending on the industry (most service industries were excluded). The survey conducted in 1987 covered only State and local governments with 50 or more employees. The surveys conducted in 1988 and 1989 included medium and large establishments with 100 workers or more in private industries. All surveys conducted over the 1979–89 period excluded establishments in Alaska and Hawaii, as well as part-time employees.

Beginning in 1990, surveys of State and local governments and small establishments are conducted in even-numbered years and surveys of medium and large establishments are conducted in odd-numbered years. The small establishment survey includes all private nonfarm establishments with fewer than 100 workers, while the State and local government survey includes all governments, regardless of the number of workers. All three surveys include full- and part-time workers, and workers in all 50 States and the District of Columbia.

FOR ADDITIONAL INFORMATION on the Employee Benefits Survey, contact the Office of Compensation Levels and Trends (202) 606–6222 or the Internet:

http://stats.bls.gov/ebshome.htm

Work stoppages

Description of the series

Data on work stoppages measure the number and duration of major strikes or lockouts (involving 1,000 workers or more) occurring during the month (or year), the number of workers involved, and the amount of time lost because of stoppage. These data are presented in table 27.

Data are largely from newspaper accounts and cover only establishments directly involved in a stoppage. They do not measure the indirect or secondary effect of stoppages on other establishments whose employees are idle owing to material shortages or lack of service.

Definitions

Number of stoppages: The number of strikes and lockouts involving 1,000 work-

ers or more and lasting a full shift or longer.

Workers involved: The number of workers directly involved in the stoppage.

Number of days idle: The aggregate number of workdays lost by workers involved in the stoppages.

Days of idleness as a percent of esti-mated working time: Aggregate workdays lost as a percent of the aggregate number of standard workdays in the period multiplied by total employment in the period.

Notes on the data

This series is not comparable with the one terminated in 1981 that covered strikes involving six workers or more.

FOR ADDITIONAL INFORMATION on work stoppages data, contact the Office of Compensation Levels and Trends: (202) 606–6282, or the Internet:

http://stats.bls.gov//lmrhome.htm

Price Data

(Tables 2; 28–38)

PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period—1982 = 100 for many Producer Price Indexes, 1982–84 = 100 for many Consumer Price Indexes (unless otherwise noted), and 1990 = 100 for International Price Indexes.

Consumer Price Indexes

Description of the series

The **Consumer Price Index** (CPI) is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all-urban consumer index (CPI-U), introduced in 1978, is representative of the 1993–95 buying habits of about 87 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners and clerical workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items are kept essentially unchanged between major revisions so that only price changes will be measured. All taxes directly associated with the purchase and use of items are included in the index.

Data collected from more than 23,000 retail establishments and 5,800 housing units in 87 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 14 major urban centers are presented in table 29. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are meaured for the CPI-U. A rental equivalence method replaced the asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI-W. The central purpose of the change was to separate shelter costs from the investment component of home-ownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes. An updated CPI-U and CPI-W were introduced with release of the January 1987 data.

FOR ADDITIONAL INFORMATION on consumer prices, contact the Division of Consumer Prices and Price Indexes: (202) 606–7000.

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received by domestic producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,200 commodities and about 80,000 quotations per month, selected to represent the movement of prices of all commodities produced in the manufacturing; agriculture, forestry, and fishing; mining; and gas and electricity and public utilities sectors. The stage-of-processing structure of PPI organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition. The industry and product structure of PPI organizes data in accordance with the Standard Industrial Classification (SIC) and the product code extension of the SIC developed by the U.S. Bureau of the Census.

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

Since January 1992, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1987. The detailed data are aggregated to obtain indexes for stage-of-processing groupings, commodity groupings, durability-of-product groupings, and a number of special composite groups. All Producer Price Index data are subject to revision 4 months after original publication.

FOR ADDITIONAL INFORMATION on producer prices, contact the Division of Industrial Prices and Price Indexes: (202) 606–7705.

International Price Indexes

Description of the series

The **International Price Program** produces monthly and quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts; it includes corporations, businesses, and individuals, but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents.

The product universe for both the import and export indexes includes raw materials, agricultural products, semifinished manufactures, and finished manufactures, including both capital and consumer goods. Price data for these items are collected primarily by mail questionnaire. In nearly all cases, the data are collected directly from the exporter or importer, although in a few cases, prices are obtained from other sources.

To the extent possible, the data gathered refer to prices at the U.S. border for exports

and at either the foreign border or the U.S. border for imports. For nearly all products, the prices refer to transactions completed during the first week of the month. Survey respondents are asked to indicate all discounts, allowances, and rebates applicable to the reported prices, so that the price used in the calculation of the indexes is the actual price for which the product was bought or sold.

In addition to general indexes of prices for U.S. exports and imports, indexes are also published for detailed product categories of exports and imports. These categories are defined according to the five-digit level of detail for the Bureau of Economic Analysis End-use Classification (SITC), and the four-digit level of detail for the Harmonized System. Aggregate import indexes by country or region of origin are also available.

BLS publishes indexes for selected categories of internationally traded services, calculated on an international basis and on a balance-of-payments basis.

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each harmonized group and are then aggregated to the higher level. The values assigned to each weight category are based on trade value figures compiled by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1990.

Because a price index depends on the same items being priced from period to period, it is necessary to recognize when a product's specifications or terms of transaction have been modified. For this reason, the Bureau's questionnaire requests detailed descriptions of the physical and functional characteristics of the products being priced, as well as information on the number of units bought or sold, discounts, credit terms, packaging, class of buyer or seller, and so forth. When there are changes in either the specifications or terms of transaction of a product, the dollar value of each change is deleted from the total price change to obtain the "pure" change. Once this value is determined, a linking procedure is employed which allows for the continued repricing of the item.

For the export price indexes, the preferred pricing is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation. An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f.(costs, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges. For a given product, only one price basis series is used in the construction of an index.

FOR ADDITIONAL INFORMATION on international prices, contact the Division of International Prices: (202) 606–7155.

Productivity Data

(Tables 2; 39–42)

Business sector and major sectors

Description of the series

The productivity measures relate real output to real input. As such, they encompass a family of measures which include single-factor input measures, such as output per unit of labor input (output per hour) or output per unit of capital input, as well as measures of multifactor productivity (output per unit of combined labor and capital inputs). The Bureau indexes show the change in output relative to changes in the various inputs. The measures cover the business, nonfarm business, manufacturing, and nonfinancial corporate sectors.

Corresponding indexes of hourly compensation, unit labor costs, unit nonlabor payments, and prices are also provided.

Definitions

Output per hour of all persons (labor productivity) is the quantity of goods and services produced per hour of labor input. **Output per unit of capital services** (capital productivity) is the quantity of goods and services produced per unit of capital services input. **Multifactor productivity** is the quantity of goods and services produced per combined unit of labor and capital inputs.

Compensation per hour is total compensation divided by hours at work. Total compensation equals the wages and salaries of employees plus employers' contributions for social insurance and private benefit plans, plus an estimate of these payments for the self-employed (except for nonfinancial corporations in which there are no self-employed). **Real compensation per hour** is compensation per hour deflated by the change in the Consumer Price Index for All Urban Consumers.

Unit labor costs are the labor compensation costs expended in the production of a unit of output and are derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current-dollar value of output and dividing by output.

Unit nonlabor costs contain all the components of unit nonlabor payments except unit profits.

Unit profits include corporate profits with inventory valuation and capital consumption adjustments per unit of output.

Hours of all persons are the total hours at work of payroll workers, self-employed persons, and unpaid family workers.

Labor inputs are hours of all persons adjusted for the effects of changes in the education and experience of the labor force.

Capital services are the flow of services from the capital stock used in production. It is developed from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset.

Combined units of labor and capital inputs are derived by combining changes in labor and capital input with weights which represent each component's share of total output. The indexes for capital services, labor inputs, and combined units of labor and capital are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

Notes on the data

Business sector output is an annually-weighted index constructed by excluding from real gross domestic product (GDP) the following outputs: general government, nonprofit institutions, paid employees of private households, and the rental value of owner-occupied dwellings. Nonfarm business also excludes farming. Private business and private nonfarm business further exclude government enterprises. The measures are supplied by the U.S. Department of Commerce's Bureau of Economic Analysis. Annual estimates of manufacturing sectoral output are produced by the Bureau of Labor Statistics. Quarterly manufacturing output indexes from the Federal Reserve Board are adjusted to these annual output measures by the BLS. Compensation data are developed from data of the Bureau of Economic Analysis and the Bureau of Labor Statistics. Hours data are developed from data of the Bureau of Labor Statistics.

The productivity and associated cost measures in tables 39–42 describe the relationship between output in real terms and the labor and capital inputs involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input.

Although these measures relate output to

hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; shifts in the composition of the labor force; capital investment; level of output; changes in the utilization of capacity, energy, material, and research and development; the organization of production; managerial skill; and characteristics and efforts of the work force.

FOR ADDITIONAL INFORMATION on this productivity series, contact the Division of Productivity Research: (202) 606–5606.

Industry productivity measures

Description of the series

The BLS industry productivity data supplement the measures for the business economy and major sectors with annual measures of labor productivity for selected industries at the three- and four-digit levels of the Standard Industrial Classification system. The industry measures differ in methodology and data sources from the productivity measures for the major sectors because the industry measures are developed independently of the National Income and Product Accounts framework used for the major sector measures.

Definitions

Output per employee hour is derived by dividing an index of industry output by an index of aggregate hours of all employees. Output indexes are based on quantifiable units of products or services, or both, combined with value-share weights. Whenever possible, physical quantities are used as the unit of measurement for output. If quantity data are not available for a given industry, data on the constant-dollar value of production are used.

The **labor input** series consist of the hours of all employees (production and nonproduction workers), the hours of all persons (paid employees, partners, proprietors, and unpaid family workers), or the number of employees, depending upon the industry.

Notes on the data

The industry measures are compiled from data produced by the Bureau of Labor Statistics, the Departments of Commerce, Interior, and Agriculture, the Federal Reserve Board, regulatory agencies, trade associations, and other sources.

For most industries, the productivity indexes refer to the output per hour of all employees. For some transportation industries, only indexes of output per employee are prepared. For some trade and service industries, indexes of output per hour of all persons (including self-employed) are constructed.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Industry Productivity Studies: (202) 606–5618.

International Comparisons

(Tables 43–45)

Labor force and unemployment

Description of the series

Tables 43 and 44 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and several European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

Definitions

For the principal U.S. definitions of the **labor force**, **employment**, and **unemployment**, see the Notes section on Employment and Unemployment Data: Household survey data.

Notes on the data

The adjusted statistics have been adapted to the age at which compulsory schooling ends in each country, rather than to the U.S. standard of 16 years of age and older. Therefore, the adjusted statistics relate to the population aged 16 and older in France, Sweden, and the United Kingdom; 15 and older in Canada, Australia, Japan, Germany, Italy from 1993 onward, and the Netherlands; and 14 and older in Italy prior to 1993. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

In the U.S. labor force survey, persons on layoff who are awaiting recall to their jobs are classified as unemployed. European and Japanese layoff practices are quite different in nature from those in the United States; therefore, strict application of the U.S. definition has not been made on this point. For further information, see *Monthly Labor Review*, December 1981, pp. 8–11.

The figures for one or more recent years for France, Germany, Italy, the Netherlands, and the United Kingdom are calculated using adjustment factors based on labor force surveys for earlier years and are considered preliminary. The recent-year measures for these countries, therefore, are subject to revision whenever data from more current labor force surveys become available.

There are breaks in the data series for the United States (1990, 1994), France (1992), Italy (1991, 1993), the Netherlands (1988), and Sweden (1987).

For the United States, the break in series reflects a major redesign of the labor force survey questionnaire and collection methodology introduced in January 1994. Revised population estimates based on the 1990 census, adjusted for the estimated undercount, also were incorporated. In 1996, previously published data for the 1990–93 period were revised to reflect the 1990 census-based population controls, adjusted for the undercount. Therefore, data for 1994 onward are not directly comparable with data for 1993 and earlier years because of the redesign, and data for 1990 onward are not directly comparable with data for 1989 and earlier years because of the introduction of the 1990 census-based population controls, adjusted for the undercount. See the Notes section on Employment and Unemployment Data of this *Review*.

For France, the 1992 break reflects the substitution of standardized European Union Statistical Office (EUROSTAT) unemployment statistics for the unemployment data estimated according to the International Labor Office (ILO) definition and published in the Organization for Economic Cooperation and Development (OECD) annual yearbook and quarterly update. This change was made because the EUROSTAT data are more up-to-date than the OECD figures. Also, since 1992, the EUROSTAT definitions are closer to the U.S. definitions than they were in prior years. The impact of this revision was to lower the unemployment rate by 0.1 percentage point in 1992 and 1993, by 0.4 percentage point in 1994, and 0.6 percentage point in 1995.

For Italy, the 1991 break reflects a revision in the method of weighting sample data. The impact was to increase the unemployment rate by approximately 0.3 percentage point, from 6.6 to 6.9 percent in 1991.

In October 1992, the survey methodology was revised and the definition of unemployment was changed to include only those who were actively looking for a job within the 30 days preceding the survey and who

were available for work. In addition, the lower age limit for the labor force was raised from 14 to 15 years. (Prior to these changes, BLS adjusted Italy's published unemployment rate downward by excluding from the unemployed those persons who had not actively sought work in the past 30 days.) The break in the series also reflects the incorporation of the 1991 population census results. The impact of these changes was to raise Italy's adjusted unemployment rate by approximately 1.2 percentage points, from 8.3 to 9.5 percent in fourth-quarter 1992. These changes did not affect employment significantly, except in 1993. Estimates by the Italian Statistical Office indicate that employment declined by about 3 percent in 1993, rather than the nearly 4 percent indicated by the data shown in table 44. This difference is attributable mainly to the incorporation of the 1991 population benchmarks in the 1993 data. Data for earlier years have not been adjusted to incorporate the 1991 census results.

For the Netherlands, a new survey questionnaire was introduced in 1992 that allowed for a closer application of ILO guidelines. EUROSTAT has revised the Dutch series back to 1988 based on the 1992 changes. The 1988 revised unemployment rate is 7.6 percent; the previous estimate for the same year was 9.3 percent.

There have been two breaks in series in the Swedish labor force survey, in 1987 and 1993. Adjustments have been made for the 1993 break back to 1987. In 1987, a new questionnaire was introduced. Questions regarding current availability were added and the period of active workseeking was reduced from 60 days to 4 weeks. These changes lowered Sweden's 1987 unemployment rate by 0.4 percentage point, from 2.3 to 1.9 percent. In 1993, the measurement period for the labor force survey was changed to represent all 52 weeks of the year rather than one week each month and a new adjustment for population totals was introduced. The impact was to raise the unemployment rate by approximately 0.5 percentage point, from 7.6 to 8.1 percent. Statistics Sweden revised its labor force survey data for 1987–92 to take into account the break in 1993. The adjustment raised the Swedish unemployment rate by 0.2 percentage point in 1987 and gradually rose to 0.5 percentage point in 1992.

Beginning with 1987, BLS has adjusted the Swedish data to classify students who also sought work as unemployed. The impact of this change was to increase the adjusted unemployment rate by 0.1 percentage point in 1987 and by 1.8 percentage points in 1994, when unemployment was higher. By 1994, the adjusted unemployment rate had risen from 7.8 to 9.6 percent due to the adjustment to include students.

The net effect of the 1987 and 1993 changes and the BLS adjustment for students seeking work lowered Sweden's 1987 unemployment rate from 2.3 to 2.2 percent.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 606–5654.

Manufacturing productivity and labor costs

Description of the series

Table 45 presents comparative indexes of manufacturing labor productivity (output per hour), output, total hours, compensation per hour, and unit labor costs for the United States, Canada, Japan, and nine European countries. These measures are trend comparisons—that is, series that measure changes over time—rather than level comparisons. There are greater technical problems in comparing the levels of manufacturing output among countries.

BLS constructs the comparative indexes from three basic aggregate measures—output, total labor hours, and total compensation. The hours and compensation measures refer to all employed persons (wage and salary earners plus self-employed persons and unpaid family workers) in the United States, Canada, Japan, France, Germany, Norway, and Sweden, and to all employees (wage and salary earners) in the other countries.

Definitions

Output, in general, refers to value added in manufacturing from the national accounts of each country. However, the output series for Japan prior to 1970 is an index of industrial production, and the national accounts measures for the United Kingdom are essentially identical to their indexes of industrial production. While methods of deriving national accounts measures differ from country to country, BLS has reviewed these methods and determined that the series are sufficiently comparable for measuring comparative trends in productivity and unit labor costs.

The 1977–94 output data for the United States are the gross product originating (value added) measures prepared by the Bureau of Economic Analysis of the U.S. Department of Commerce. Comparable manufacturing output data currently are not available prior to 1977. The 1994–95 percent changes in manufacturing output are based on the trend shown by the industrial production index published by the U.S. Federal Reserve Board for the manufacturing sector.

U.S. gross product originating is a chain-type annual-weighted series. (For more information on the U.S. measure, see Robert E. Yuskavage, "Improved Estimates of Gross Product by Industry, 1959–94," *Survey of Current Business*, August 1996, pp. 133–55.) The Japanese value added series is based upon one set of fixed price weights for the years 1970 through 1996. Output series for the other foreign economies also employ fixed price weights, but the weights are updated periodically (for example, every 5 or 10 years).

To preserve the comparability of the U.S. measures with those for other economies, BLS uses gross product originating in manufacturing for the United States for these comparative measures. The gross product originating series differs from the manufacturing output series that BLS publishes in its news releases on quarterly measures of U.S. productivity and costs (and that underlies the measures that appear in tables 39 and 41 in this section). The quarterly measures are on a "sectoral output" basis, rather than a value-added basis. Sectoral output is gross output less intrasector transactions.

Total labor hours refers to hours worked in all countries. The measures are developed from statistics of manufacturing employment and average hours. The series used for France (from 1970 forward), Norway, and Sweden are official series published with the national accounts. Where official total hours series are not available, the measures are developed by BLS using employment figures published with the national accounts, or other comprehensive employment series, and estimates of annual hours worked. For Germany, BLS uses estimates of average hours worked developed by a research institute connected to the Ministry of Labor for use with the national accounts employment figures. For the other countries, BLS constructs its own estimates of average hours.

Denmark has not published estimates of average hours for 1994–96; therefore, the BLS measure of labor input for Denmark ends in 1993.

Total compensation (labor cost) includes all payments in cash or in-kind made directly to employees plus employer expenditures for legally required insurance programs and contractual and private benefit plans. The measures are from the national accounts of each country, except those for Belgium, which are developed by BLS using statistics on employment, average hours, and hourly compensation. For France and Sweden, compensation is increased to account for other significant taxes on payroll or employment. For the United Kingdom, compensation is reduced between 1967 and 1991 to account for employment-related subsidies. Self-employed workers are included in the all-employed-persons measures by assuming that their hourly compensation is equal to the average for wage and salary employees.

Notes on the data

In general, the measures relate to total manufacturing as defined by the International Standard Industrial Classification. However, the measures for France (for all years) and Italy (beginning 1970) refer to mining and manufacturing less energy-related products, and the measures for Denmark include mining and exclude manufacturing handicrafts from 1960 to 1966.

The measures for recent years may be based on current indicators of manufacturing output (such as industrial production indexes), employment, average hours, and hourly compensation until national accounts and other statistics used for the long-term measures become available.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 606–5654.

Occupational Injury and Illness Data

(Table 46–47)

Survey of Occupational Injuries and Illnesses

Description of the series

The Survey of Occupational Injuries and Illnesses collects data from employers about their workers' job-related nonfatal injuries and illnesses. The information that employers provide is based on records that they maintain under the Occupational Safety and Health Act of 1970. Self-employed individuals, farms with fewer than 11 employees, employers regulated by other Federal safety and health laws, and Federal, State, and local government agencies are excluded from the survey.

The survey is a Federal-State cooperative program with an independent sample selected for each participating State. A stratified random sample with a Neyman allocation is selected to represent all private industries in the State. The survey is stratified by Standard Industrial Classification and size of employment.

Definitions

Under the Occupational Safety and Health Act, employers maintain records of nonfatal work-related injuries and illnesses that involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid.

Occupational injury is any injury such as a cut, fracture, sprain, or amputation that results from a work-related event or a single, instantaneous exposure in the work environment.

Occupational illness is an abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to factors associated with employment. It includes acute and chronic illnesses or disease which may be caused by inhalation, absorption, ingestion, or direct contact.

Lost workday injuries and illnesses are cases that involve days away from work, or days of restricted work activity, or both.

Lost workdays include the number of workdays (consecutive or not) on which the employee was either away from work or at work in some restricted capacity, or both, because of an occupational injury or illness. BLS measures of the number and incidence rate of lost workdays were discontinued beginning with the 1993 survey. The number of days away from work or days of restricted work activity does not include the day of injury or onset of illness or any days on which the employee would not have worked, such as a Federal holiday, even though able to work.

Incidence rates are computed as the number of injuries and/or illnesses or lost work days per 100 full-time workers.

Notes on the data

The definitions of occupational injuries and illnesses are from *Recordkeeping Guidelines for Occupational Injuries and Illnesses* (U.S. Department of Labor, Bureau of Labor Statistics, September 1986).

Estimates are made for industries and employment size classes for total recordable cases, lost workday cases, days away from work cases, and nonfatal cases without lost workdays. These data also are shown separately for injuries. Illness data are available for seven categories: occupational skin diseases or disorders, dust diseases of the lungs, respiratory conditions due to toxic agents, poisoning (systemic effects of toxic agents), disorders due to physical agents (other than toxic materials), disorders associated with repeated trauma, and all other occupational illnesses.

The survey continues to measure the number of new work-related illness cases which are recognized, diagnosed, and reported during the year. Some conditions, for example, long-term latent illnesses caused by exposure to carcinogens, often are difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be understated in the survey's illness measure. In contrast, the overwhelming majority of the reported new illnesses are those which are easier to directly relate to workplace activity (for example, contact dermatitis and carpal tunnel syndrome).

Most of the estimates are in the form of incidence rates, defined as the number of injuries and illnesses per 100 equivalent full-time workers. For this purpose, 200,000 employee hours represent 100 employee years (2,000 hours per employee). Full detail on the available measures is presented in the annual bulletin, *Occupational Injuries and Illnesses: Counts, Rates, and Characteristics.*

Comparable data for more than 40 States and territories are available from the BLS Office of Safety, Health and Working Conditions. Many of these States publish data on State and local government employees in addition to private industry data.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration. Data from these organizations are included in both the national and State data published annually.

With the 1992 survey, BLS began publishing details on serious, nonfatal incidents resulting in days away from work. Included are some major characteristics of the injured and ill workers, such as occupation, age, gender, race, and length of service, as well as the circumstances of their injuries and illnesses (nature of the disabling condition, part of body affected, event and exposure, and the source directly producing the condition). In general, these data are available nationwide for detailed industries and for individual States at more aggregated industry levels.

FOR ADDITIONAL INFORMATION on occupational injuries and illnesses, contact the Office of Occupational Safety, Health and Working Conditions at (202) 606–6180, or access the Internet at:

http://www.bls.gov/oshhome.htm

Census of Fatal Occupational Injuries

The Census of Fatal Occupational Injuries compiles a complete roster of fatal job-related injuries, including detailed data about the fatally injured workers and the fatal events. The program collects and cross checks fatality information from multiple sources, including death certificates, State and Federal workers' compensation reports, Occupational Safety and Health Administration and Mine Safety and Health Administration records, medical examiner and autopsy reports, media accounts, State motor vehicle fatality records, and follow-up questionnaires to employers.

In addition to private wage and salary workers, the self-employed, family members, and Federal, State, and local government workers are covered by the program. Institutionalized persons, such as prison inmates, are excluded. To be included in the

fatality census, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in a legal work activity, or present at the site of the incident as a requirement of his or her job.

Definition

A fatal work injury is any intentional or unintentional wound or damage to the body resulting in death from acute exposure to energy, such as heat or electricity or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event or incident or series of events within a single workday or shift. Fatalities that occur during a person's commute to or from work are excluded from the census, as well as work-related illnesses, which can be difficult to identify due to long latency periods.

Notes on the data

Twenty-eight data elements are collected, coded, and tabulated in the fatality program, including information about the fatally injured worker, the fatal incident, and the machinery or equipment involved. Summary worker demographic data and event characteristics are included in a national news release that is available about 8 months after the end of the reference year. The Census of Fatal Occupational Injuries was initiated in 1992 as a joint Federal-State effort. Most States issue summary information at the time of the national news release.

FOR ADDITIONAL INFORMATION on the Census of Fatal Occupational Injuries contact the BLS Office of Safety, Health, and Working Conditions at (202) 606–6175, or the Internet at:

http://www.bls.gov/oshhome.htm

1. Labor market indicators

Selected indicators	1996	1997	1996			1997				1998
			II	III	IV	I	II	III	IV	I
Employment data										
Employment status of the civilian noninstitutionalized population (household survey):[1]										
Labor force participation rate	66.8	67.1	66.7	66.8	67.0	67.1	67.1	67.1	67.1	67.3
Employment-population ratio	63.2	63.8	63.1	63.3	63.4	63.6	63.8	63.8	64.0	64.1
Unemployment rate	5.4	4.9	5.4	5.3	5.3	5.3	4.9	4.9	4.7	4.7
Men	5.4	4.9	5.5	5.3	5.2	5.2	4.8	4.8	4.7	4.5
16 to 24 years	12.6	11.8	12.7	12.4	12.3	12.3	11.5	11.8	11.6	11.4
25 years and over	4.1	3.6	4.1	4.0	3.9	3.9	3.6	3.5	3.4	3.3
Women	5.4	5.0	5.4	5.3	5.5	5.4	5.1	5.0	4.7	4.9
16 to 24 years	11.3	10.7	11.0	11.1	11.4	11.5	10.9	10.5	10.1	10.1
25 years and over	4.3	3.9	4.3	4.2	4.3	4.2	3.9	3.9	3.6	3.8
Employment, nonfarm (payroll data), in thousands:[1]										
Total	119,608	122,690	119,273	119,974	120,655	121,461	122,317	122,995	123,934	124,795
Private sector	100,189	103,120	99,865	100,553	101,223	102,001	102,797	103,392	104,271	105,084
Goods-producing	24,493	24,934	24,453	24,542	24,648	24,787	24,881	24,963	25,108	25,296
Manufacturing	18,495	18,657	18,485	18,503	18,526	18,579	18,625	18,672	18,756	18,825
Service-producing	95,115	97,756	94,820	95,432	96,008	96,674	97,436	98,032	98,826	99,500
Average hours:										
Private sector	34.4	34.6	34.4	34.5	34.5	34.6	34.6	34.6	34.7	34.7
Manufacturing	41.6	42.0	41.7	41.8	41.8	41.9	42.0	41.9	42.1	42.0
Overtime	4.5	4.8	4.5	4.6	4.5	4.8	4.8	4.8	4.9	4.8
Employment Cost Index[2]										
Percent change in the ECI, compensation:										
All workers (excluding farm, household and Federal workers)	2.9	3.3	.7	.8	.5	.8	.6	1.0	.8	.8
Private industry workers	3.1	3.4	.9	.6	.6	.8	.8	.8	.9	.9
Goods-producing[3]	2.8	2.4	.9	.6	.6	.4	1.0	.7	.4	.7
Service-producing[3]	3.2	3.9	.8	.7	.5	1.1	.7	1.0	1.1	1.0
State and local government workers	2.6	2.3	.2	1.3	.6	.4	.1	1.3	.5	.6
Workers by bargaining status (private industry):										
Union	2.4	2.1	.9	.3	.5	.2	.6	1.1	.2	.4
Nonunion	3.1	3.8	.8	.8	.5	1.1	.8	.8	1.0	1.0

[1] Quarterly data seasonally adjusted.

[2] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter.

[3] Goods-producing industries include mining, construction, and manufacturing. Service-producing industries include all other private sector industries.

2. Annual and quarterly percent changes in compensation, prices, and productivity

Selected measures	1996	1997	1996			1997				1998
			II	III	IV	I	II	III	IV	I
Compensation data[1,2]										
Employment Cost Index—compensation (wages, salaries, benefits):										
Civilian nonfarm	2.9	3.3	0.7	0.8	0.5	0.8	0.6	1.0	0.8	0.8
Private nonfarm	3.1	3.4	.9	.6	.6	.8	.8	.8	.9	.9
Employment Cost Index—wages and salaries:										
Civilian nonfarm	3.3	3.8	.8	.9	.6	.9	.7	1.2	.9	.9
Private nonfarm	3.4	3.9	1.0	.7	.6	1.0	.9	1.0	1.0	1.1
Price data[1]										
Consumer Price Index (All Urban Consumers): All Items	3.3	1.7	.6	.7	.5	.9	.2	.6	.1	.6
Producer Price Index:										
Finished goods	2.8	−1.2	1.2	.1	.7	−.5	−.4	.2	−.5	−1.1
Finished consumer goods	3.6	−1.4	1.6	.3	.6	−.6	−.2	.4	−.8	−1.4
Capital equipment	.4	−.6	−.1	−.7	1.0	.1	−.5	−.7	.5	.0
Intermediate materials, supplies, and components	.7	−.8	1.0	.4	−.6	−.3	.1	.2	−.8	−1.4
Crude materials	14.7	−11.3	3.0	−.4	7.7	−11.5	−.4	1.3	−.6	−8.0
Productivity data[3]										
Output per hour of all persons:										
Business sector	2.0	1.8	3.1	−.7	2.0	1.6	2.2	3.5	1.6	1.7
Nonfarm business sector	1.9	1.7	2.9	−.7	1.9	1.1	2.3	3.6	1.4	1.1
Nonfinancial corporations[4]	3.1	2.6	4.1	2.7	2.1	1.7	2.4	6.3	.6	2.6

[1] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted, and the price data are not compounded.

[2] Excludes Federal and private household workers.

[3] Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

[4] Output per hour of all employees.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ending—					
	1996	1997				1998	1996	1997				1998
	IV	I	II	III	IV	I	IV	I	II	III	IV	I
Average hourly compensation:[1]												
All persons, business sector	3.4	4.1	3.1	4.2	5.6	4.4	4.0	4.1	3.6	3.7	4.3	4.3
All persons, nonfarm business sector	3.4	4.3	3.2	3.8	5.2	4.2	3.9	4.0	3.5	3.7	4.1	4.1
Employment Cost Index—compensation:												
Civilian nonfarm[2]	.5	.8	.6	1.0	.8	.8	2.9	2.9	2.8	3.0	3.3	3.3
Private nonfarm	.6	.8	.8	.8	.9	.9	3.1	3.0	2.9	3.2	3.4	3.5
Union	.5	.2	.6	1.1	.2	.4	2.4	1.9	1.6	2.4	2.1	2.3
Nonunion	.5	1.1	.8	.8	1.0	1.0	3.1	3.2	3.2	3.2	3.8	3.7
State and local governments	.6	.4	.1	1.3	.5	.6	2.6	2.5	2.4	2.4	2.3	2.5
Employment Cost Index—wages and salaries:												
Civilian nonfarm[2]	.6	.9	.7	1.2	.9	.9	3.3	3.3	3.2	3.5	3.8	3.7
Private nonfarm	.6	1.0	.9	1.0	1.0	1.1	3.4	3.4	3.3	3.6	3.9	4.0
Union	.5	.5	.7	1.1	.5	.5	2.6	2.6	2.2	2.8	2.8	2.9
Nonunion	.6	1.1	.9	1.0	1.1	1.1	3.6	3.4	3.5	3.7	4.2	4.2
State and local governments	.6	.4	.1	1.6	.6	.5	2.8	2.8	2.7	2.7	2.7	2.8

[1] Seasonally adjusted. "Quarterly average" is percent change from a quarter ago, at an annual rate.

[2] Excludes Federal and household workers.

4. Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
TOTAL															
Civilian noninstitutional population[1]	200,591	203,133	202,832	203,000	203,166	203,364	203,570	203,767	203,941	204,098	204,238	204,400	204,547	204,731	204,899
Civilian labor force	133,943	136,297	136,060	136,206	136,294	136,404	136,439	136,406	136,864	137,169	137,493	137,557	137,523	137,242	137,364
Participation rate	66.8	67.1	67.1	67.1	67.1	67.1	67.0	66.9	67.1	67.2	67.3	67.3	67.2	67.0	67.0
Employed	126,708	129,558	129,494	129,392	129,661	129,747	129,761	129,910	130,575	130,777	131,083	131,163	130,994	131,383	131,453
Employment-population ratio[2]	63.2	63.8	63.8	63.7	63.8	63.8	63.7	63.8	64.0	64.1	64.2	64.2	64.0	64.2	64.2
Unemployed	7,236	6,739	6,566	6,814	6,633	6,657	6,678	6,496	6,289	6,392	6,409	6,393	6,529	5,859	5,910
Unemployment rate	5.4	4.9	4.8	5.0	4.9	4.9	4.9	4.8	4.6	4.7	4.7	4.6	4.7	4.3	4.3
Not in the labor force	66,647	66,837	66,772	66,794	66,872	66,960	67,131	67,361	67,077	66,929	66,745	66,844	67,024	67,489	67,535
Men, 20 years and over															
Civilian noninstitutional population[1]	88,606	89,879	89,776	89,829	89,888	89,982	90,068	90,140	90,251	90,339	90,391	90,476	90,502	90,580	90,622
Civilian labor force	68,044	69,166	68,990	69,157	69,171	69,198	69,136	69,193	69,500	69,561	69,652	69,601	69,451	69,697	69,624
Participation rate	76.8	77.0	76.9	77.0	77.0	76.9	76.8	76.8	77.0	77.0	77.1	76.9	76.7	76.9	76.8
Employed	64,897	66,284	66,309	66,258	66,361	66,386	66,298	66,337	66,824	66,676	67,008	66,990	66,753	67,301	67,190
Employment-population ratio[2]	73.2	73.7	73.9	73.8	73.8	73.8	73.6	73.6	74.0	73.8	74.1	74.0	73.8	74.3	74.1
Agriculture	2,356	2,356	2,402	2,398	2,390	2,311	2,383	2,298	2,323	2,314	2,282	2,264	2,168	2,420	2,324
Nonagricultural industries	62,541	63,927	63,907	63,860	63,971	64,075	63,915	64,039	64,501	64,362	64,726	64,726	64,585	64,881	64,866
Unemployed	3,146	2,882	2,681	2,899	2,810	2,812	2,838	2,856	2,676	2,885	2,644	2,611	2,699	2,396	2,434
Unemployment rate	4.6	4.2	3.9	4.2	4.1	4.1	4.1	4.1	3.9	4.1	3.8	3.8	3.9	3.4	3.5
Women, 20 years and over															
Civilian noninstitutional population[1]	97,050	97,889	97,767	97,834	97,919	98,000	98,082	98,144	98,212	98,300	98,420	98,471	98,534	98,583	98,668
Civilian labor force	58,094	59,198	59,129	59,195	59,232	59,362	59,432	59,338	59,348	59,624	59,652	59,721	59,771	59,486	59,573
Participation rate	59.9	60.5	60.5	60.5	60.5	60.6	60.6	60.5	60.4	60.7	60.6	60.6	60.7	60.3	60.4
Employed	55,311	56,613	56,488	56,575	56,693	56,789	56,883	56,919	56,953	57,255	57,040	57,146	57,186	57,075	57,253
Employment-population ratio[2]	57.0	57.8	57.8	57.8	57.9	57.9	58.0	58.0	58.0	58.2	58.0	58.0	58.0	57.9	58.0
Agriculture	827	798	760	755	831	824	826	814	833	845	811	801	717	705	755
Nonagricultural industries	54,484	55,815	55,728	55,820	55,862	55,965	56,057	56,105	56,120	56,410	56,229	56,345	56,470	56,370	56,499
Unemployed	2,783	2,585	2,641	2,620	2,539	2,573	2,549	2,419	2,395	2,369	2,612	2,575	2,585	2,411	2,320
Unemployment rate	4.8	4.4	4.5	4.4	4.3	4.3	4.3	4.1	4.0	4.0	4.4	4.3	4.3	4.1	3.9
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	14,934	15,365	15,300	15,336	15,359	15,382	15,420	15,483	15,478	15,459	15,427	15,453	15,511	15,569	15,609
Civilian labor force	7,806	7,932	7,941	7,854	7,891	7,844	7,871	7,875	8,016	7,984	8,189	8,235	8,300	8,059	8,166
Participation rate	52.3	51.6	51.9	51.2	51.4	51.0	51.0	50.9	51.8	51.6	53.1	53.3	53.5	51.8	52.3
Employed	6,500	6,661	6,697	6,559	6,607	6,572	6,580	6,654	6,798	6,846	7,035	7,028	7,055	7,007	7,010
Employment-population ratio[2]	43.5	43.4	43.8	42.8	43.0	42.7	42.7	43.0	43.9	44.3	45.6	45.5	45.5	45.0	44.9
Agriculture	261	244	256	236	231	244	213	215	228	226	227	270	247	225	256
Nonagricultural industries	6,239	6,417	6,441	6,323	6,376	6,328	6,367	6,439	6,570	6,620	6,809	6,758	6,808	6,782	6,754
Unemployed	1,306	1,271	1,244	1,295	1,284	1,272	1,291	1,221	1,218	1,138	1,154	1,207	1,245	1,052	1,156
Unemployment rate	16.7	16.0	15.7	16.5	16.3	16.2	16.4	15.5	15.2	14.3	14.1	14.7	15.0	13.1	14.2
White															
Civilian noninstitutional population[1]	168,317	169,993	169,782	169,897	170,010	170,148	170,290	170,427	170,545	170,649	170,810	170,917	171,016	171,141	171,257
Civilian labor force	113,108	114,693	114,562	114,659	114,622	114,669	114,758	114,784	115,073	115,263	115,253	115,392	115,297	115,057	115,309
Participation rate	67.2	67.5	67.5	67.5	67.4	67.4	67.4	67.4	67.5	67.5	67.5	67.5	67.4	67.2	67.3
Employed	107,808	109,856	109,906	109,779	109,851	109,832	109,904	110,063	110,604	110,729	110,689	110,842	110,605	110,859	111,025
Employment-population ratio[2]	64.1	64.6	64.7	64.6	64.6	64.6	64.5	64.6	64.9	64.9	64.8	64.9	64.7	64.8	64.8
Unemployed	5,300	4,836	4,656	4,880	4,771	4,837	4,854	4,721	4,469	4,534	4,555	4,550	4,692	4,198	4,284
Unemployment rate	4.7	4.2	4.1	4.3	4.2	4.2	4.2	4.1	3.9	3.9	4.0	3.9	4.1	3.6	3.7
Black															
Civilian noninstitutional population[1]	23,604	24,003	23,950	23,978	24,006	24,043	24,081	24,117	24,149	24,180	24,196	24,229	24,257	24,289	24,317
Civilian labor force	15,134	15,529	15,424	15,426	15,524	15,728	15,691	15,555	15,638	15,709	15,788	15,885	15,971	15,907	15,756
Participation rate	64.1	64.7	64.4	64.3	64.7	65.4	65.2	64.5	64.8	65.0	65.3	65.6	65.8	65.5	64.8
Employed	13,542	13,969	13,837	13,836	14,040	14,237	14,180	14,067	14,128	14,149	14,316	14,349	14,498	14,499	14,344
Employment-population ratio[2]	57.4	58.2	57.8	57.7	58.5	59.2	28.9	58.3	58.5	58.5	59.2	59.2	59.8	59.7	59.0
Unemployed	1,592	1,560	1,587	1,590	1,484	1,491	1,511	1,488	1,510	1,560	1,472	1,535	1,473	1,408	1,412
Unemployment rate	10.5	10.0	10.3	10.3	9.6	9.5	9.6	9.6	9.7	9.9	9.3	9.7	9.2	8.9	9.0

See footnotes at end of table.

4. Continued—Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Hispanic origin															
Civilian noninstitutional population[1]	19,213	20,321	20,236	20,293	20,351	20,407	20,464	20,519	20,575	20,629	20,741	20,798	20,851	20,915	20,975
Civilian labor force	12,774	13,796	13,760	13,814	13,861	13,886	13,861	13,896	13,880	13,973	13,954	14,149	14,298	14,369	14,458
Participation rate	66.5	67.9	68.0	68.1	68.1	68.0	67.7	67.7	67.5	67.7	67.3	68.0	68.6	68.7	68.9
Employed	11,642	12,726	12,713	12,751	12,772	12,867	12,807	12,806	12,921	12,921	12,988	13,181	13,305	13,434	13,480
Employment-population ratio[2]	60.6	62.6	62.8	62.8	62.8	63.1	62.6	62.4	62.8	62.6	62.6	63.4	63.8	64.2	64.3
Unemployed	1,132	1,069	1,047	1,063	1,089	1,019	1,054	1,090	959	1,052	966	968	993	935	978
Unemployment rate	8.9	7.7	7.6	7.7	7.9	7.3	7.6	7.8	6.9	7.5	6.9	6.8	6.9	6.5	6.8

[1] The population figures are not seasonally adjusted.

[2] Civilian employment as a percent of the civilian noninstitutional population.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

5. Selected employment indicators, monthly data seasonally adjusted

[In thousands]

Selected categories	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Characteristic															
Employed, 16 years and over	126,708	129,558	129,494	129,392	129,661	129,747	129,761	129,910	130,575	130,777	131,083	131,163	130,994	131,383	131,453
Men	68,207	69,685	69,765	69,586	69,711	69,748	69,656	69,785	70,352	70,195	70,518	70,459	70,297	70,831	70,685
Women	58,501	59,873	59,729	59,806	59,950	59,999	60,105	60,125	60,223	60,582	60,565	60,704	60,697	60,553	60,768
Married men, spouse present	42,417	42,642	42,357	42,476	42,582	42,680	42,648	42,771	42,967	42,952	42,977	42,915	42,779	42,865	42,471
Married women, spouse present	32,406	32,755	32,520	32,654	32,813	32,861	32,846	32,978	32,840	32,975	32,793	32,821	32,872	32,973	32,805
Women who maintain families	7,363	7,775	7,820	7,820	7,875	7,892	7,876	7,865	7,726	7,822	7,784	7,884	7,776	7,813	7,848
Class of worker															
Agriculture:															
Wage and salary workers	1,869	1,890	1,917	1,912	1,897	1,853	1,889	1,815	1,855	1,844	1,949	1,928	1,866	1,987	1,871
Self-employed workers	1,518	1,457	1,442	1,429	1,478	1,477	1,495	1,475	1,493	1,496	1,348	1,324	1,242	1,324	1,395
Unpaid family workers	56	51	52	47	52	50	44	55	49	54	44	41	32	28	51
Nonagricultural industries:															
Wage and salary workers	114,171	116,983	116,874	116,642	117,146	117,372	117,303	117,635	118,083	118,403	118,529	118,961	119,131	118,774	119,013
Government	18,217	18,131	17,863	18,113	18,303	18,203	18,109	18,075	18,170	18,248	18,421	18,378	18,072	18,202	18,034
Private industries	95,954	98,852	99,011	98,529	98,843	99,169	99,194	99,560	99,913	100,155	100,108	100,583	101,058	100,571	100,979
Private households	928	915	948	888	911	935	877	877	910	946	985	1,035	1,022	1,014	1,015
Other	95,025	97,937	98,063	97,641	97,932	98,234	98,317	98,683	99,003	99,209	99,123	99,547	100,037	99,557	99,964
Self-employed workers	8,971	9,056	9,098	9,089	8,927	8,955	8,949	8,930	9,004	8,886	8,964	8,761	8,784	9,069	9,023
Unpaid family workers	122	120	142	128	129	126	83	92	97	99	131	117	102	124	97
Persons at work part time[1]															
All industries:															
Part time for economic reasons	4,315	4,068	4,060	4,049	4,019	3,988	3,928	3,913	3,890	3,855	4,082	3,882	3,902	3,735	3,772
Slack work or business conditions	2,388	2,286	2,295	2,347	2,236	2,164	2,187	2,211	2,221	2,230	2,282	2,123	2,188	2,074	2,104
Could only find part-time work	1,605	1,468	1,440	1,373	1,489	1,487	1,455	1,406	1,386	1,323	1,400	1,455	1,445	1,300	1,344
Part time for noneconomic reasons	17,770	18,149	18,218	18,205	18,055	18,096	17,901	18,113	18,083	18,386	18,515	18,407	18,448	18,084	18,662
Nonagricultural industries:															
Part time for economic reasons	4,123	3,879	3,853	3,819	3,858	3,832	3,739	3,732	3,689	3,654	3,865	3,743	3,726	3,608	3,630
Slack work or business conditions	2,263	2,167	2,166	2,202	2,121	2,066	2,067	2,103	2,100	2,113	2,162	2,025	2,057	1,998	2,024
Could only find part-time work	1,576	1,433	1,402	1,320	1,462	1,455	1,417	1,378	1,346	1,291	1,373	1,433	1,416	1,276	1,315
Part time for noneconomic reasons	17,150	17,564	17,654	17,577	17,452	17,521	17,381	17,537	17,486	17,791	17,898	17,786	17,929	17,470	18,067

[1] Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

6. Selected unemployment indicators, monthly data seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Characteristic															
Total, all workers	5.4	4.9	4.8	5.0	4.9	4.9	4.9	4.8	4.6	4.7	4.7	4.6	4.7	4.3	4.3
Both sexes, 16 to 19 years	16.7	16.0	15.7	16.5	16.3	16.2	16.4	15.5	15.2	14.3	14.1	14.7	15.0	13.1	14.2
Men, 20 years and over	4.6	4.2	3.9	4.2	4.1	4.1	4.1	4.1	3.9	4.1	3.8	3.8	3.9	3.4	3.5
Women, 20 years and over	4.8	4.4	4.5	4.4	4.3	4.3	4.3	4.1	4.0	4.0	4.4	4.3	4.3	4.1	3.9
White, total	4.7	4.2	4.1	4.3	4.2	4.2	4.2	4.1	3.9	3.9	4.0	3.9	4.1	3.6	3.7
Both sexes, 16 to 19 years	14.2	13.6	12.9	14.4	14.4	14.2	14.1	13.4	12.3	11.2	11.6	12.3	12.8	11.8	12.0
Men, 16 to 19 years	15.5	14.3	13.0	15.8	15.0	15.1	14.4	14.3	12.8	11.3	14.2	14.7	14.9	12.7	14.0
Women, 16 to 19 years	12.9	12.8	12.7	12.8	13.7	13.1	13.7	12.3	11.6	11.1	8.8	9.8	10.6	10.7	9.8
Men, 20 years and over	4.1	3.6	3.3	3.6	3.5	3.6	3.6	3.6	3.4	3.6	3.3	3.2	3.4	2.9	3.1
Women, 20 years and over	4.1	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.4	3.4	3.7	3.6	3.7	3.4	3.3
Black, total	10.5	10.0	10.3	10.3	9.6	9.5	9.6	9.6	9.7	9.9	9.3	9.7	9.2	8.9	9.0
Both sexes, 16 to 19 years	33.6	32.4	33.9	32.2	30.0	30.4	32.7	29.5	33.3	34.4	30.1	31.5	29.1	24.7	29.4
Men, 16 to 19 years	36.9	36.5	34.5	39.1	34.6	33.9	37.6	30.1	35.0	36.2	31.8	34.7	27.8	23.9	30.2
Women, 16 to 19 years	30.3	28.7	33.3	25.5	25.9	27.2	28.6	28.8	31.9	33.1	28.5	28.4	30.3	25.3	28.8
Men, 20 years and over	9.4	8.5	8.4	9.0	8.3	7.9	7.9	8.3	7.8	8.6	7.9	7.8	7.6	7.4	6.7
Women, 20 years and over	8.7	8.8	9.2	9.0	8.4	8.4	8.4	8.3	8.4	8.1	8.0	8.6	8.2	8.2	8.4
Hispanic origin, total	8.9	7.7	7.6	7.7	7.9	7.3	7.6	7.8	6.9	7.5	6.9	6.8	6.9	6.5	6.8
Married men, spouse present	3.0	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.4	2.6	2.6	2.5	2.5	2.2	2.4
Married women, spouse present	3.6	3.1	3.2	3.2	3.1	3.0	3.1	2.8	2.8	2.8	3.1	3.1	3.3	2.8	2.8
Women who maintain families	8.2	8.1	7.9	8.0	7.6	8.0	7.8	7.8	8.1	7.7	7.6	7.6	7.6	7.6	7.7
Full-time workers	5.3	4.8	4.8	4.9	4.8	4.7	4.7	4.7	4.4	4.6	4.5	4.5	4.5	4.2	4.2
Part-time workers	5.8	5.5	5.3	5.3	5.4	5.5	5.5	5.3	5.4	5.0	5.4	5.2	5.7	4.8	4.7
Industry															
Nonagricultural wage and salary workers	5.5	5.0	5.0	5.0	4.9	5.0	5.0	4.8	4.7	4.8	4.7	4.7	4.7	4.3	4.5
Mining	5.1	3.8	3.3	2.8	4.1	4.9	3.4	4.5	3.3	3.3	4.0	2.6	3.7	2.3	1.3
Construction	10.1	9.0	8.6	8.8	8.7	9.0	8.7	8.7	7.9	8.9	7.9	7.8	8.6	6.3	8.0
Manufacturing	4.8	4.2	4.3	4.2	4.3	4.1	4.1	3.8	3.6	3.8	3.9	3.7	3.8	3.9	3.6
Durable goods	4.5	3.5	3.6	3.6	3.5	3.5	3.3	3.1	3.1	3.1	3.4	2.9	3.6	3.5	3.0
Nondurable goods	5.2	5.1	5.3	5.0	5.4	5.0	5.3	4.8	4.4	4.9	4.5	5.0	4.2	4.4	4.6
Transportation and public utilities	4.1	3.5	3.6	3.0	3.4	3.7	3.8	3.3	3.1	3.3	3.8	3.2	3.3	3.1	3.0
Wholesale and retail trade	6.4	6.2	6.1	6.4	6.1	6.2	6.2	6.1	6.2	5.8	5.9	5.8	5.4	5.2	5.1
Finance, insurance, and real estate	2.7	3.0	3.1	2.5	3.1	3.0	3.0	2.9	2.4	2.8	2.6	2.6	2.6	2.2	2.0
Services	5.4	4.6	4.7	4.7	4.4	4.5	4.6	4.3	4.4	4.5	4.3	4.7	4.7	4.3	4.8
Government workers	2.9	2.6	2.5	2.8	2.7	2.6	2.6	2.4	2.3	2.1	2.4	2.3	2.9	2.0	2.4
Agricultural wage and salary workers	10.2	9.1	7.6	10.4	8.4	8.9	9.0	9.6	8.6	9.7	10.6	8.6	9.7	8.0	7.9
Educational attainment[1]															
Less than a high school diploma	8.7	8.1	8.2	8.2	7.8	7.7	8.0	7.7	7.5	7.6	7.2	7.0	7.2	7.0	6.7
High school graduates, no college	4.7	4.3	4.2	4.4	4.2	4.3	4.2	4.2	3.8	4.1	3.9	4.0	4.2	3.9	3.7
Some college, less than a bachelor's degree	3.7	3.3	3.0	3.2	3.2	3.2	3.2	2.9	3.1	3.2	3.2	3.1	3.3	2.7	3.1
College graduates	2.2	2.0	2.1	2.1	2.1	2.1	2.0	1.9	1.8	1.8	1.9	1.9	1.9	1.7	1.6

[1] Data refer to persons 25 years and over.

7. Duration of unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Less than 5 weeks	2,633	2,538	2,542	2,541	2,446	2,564	2,484	2,558	2,423	2,531	2,488	2,622	2,858	2,632	2,634
5 to 14 weeks	2,287	2,138	2,067	2,188	2,097	2,121	2,115	1,912	2,048	1,922	1,971	1,909	1,979	1,901	1,954
15 weeks and over	2,316	2,062	2,076	2,069	2,128	2,027	2,109	1,990	1,865	1,964	1,811	1,830	1,731	1,417	1,462
15 to 26 weeks	1,053	995	1,054	1,031	1,061	950	1,031	919	899	936	773	855	841	584	656
27 weeks and over	1,262	1,067	1,022	1,038	1,067	1,077	1,078	1,071	966	1,028	1,038	974	891	833	806
Mean duration, in weeks	16.7	15.8	15.3	15.3	16.5	15.8	15.9	16.3	15.6	16.3	15.6	15.6	14.3	14.3	14.6
Median duration, in weeks	8.3	8.0	7.8	7.9	8.2	7.9	8.1	7.7	7.8	7.7	7.4	7.2	6.8	6.4	5.9

8. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Job losers[1]	3,370	3,037	2,961	3,094	2,954	3,010	3,007	2,934	2,886	2,991	2,807	2,795	2,980	2,631	2,772
On temporary layoff	1,021	931	909	928	894	891	893	963	815	961	860	821	980	696	786
Not on temporary layoff	2,349	2,106	2,052	2,166	2,060	2,119	2,114	1,971	2,071	2,030	1,947	1,975	2,000	1,935	1,986
Job leavers	774	795	808	827	812	894	853	732	655	692	808	786	744	625	748
Reentrants	2,512	2,338	2,338	2,333	2,263	2,173	2,263	2,247	2,229	2,170	2,229	2,266	2,215	2,096	2,033
New entrants	580	569	573	510	564	554	560	555	560	552	518	543	549	511	493
Percent of unemployed															
Job losers[1]	46.6	45.1	44.3	45.7	44.8	45.4	45.0	45.4	45.6	46.7	44.1	43.7	45.9	44.9	45.8
On temporary layoff	14.1	13.8	13.6	13.7	13.6	13.4	13.4	14.9	12.9	15.0	13.5	12.8	15.1	11.9	13.0
Not on temporary layoff	32.5	31.3	30.7	32.0	31.2	32.0	31.6	30.5	32.7	31.7	30.6	30.9	30.8	33.0	32.8
Job leavers	10.7	11.8	12.1	12.2	12.3	13.5	12.8	11.3	10.3	10.8	12.7	12.3	11.5	10.7	12.4
Reentrants	34.7	34.7	35.0	34.5	34.3	32.8	33.9	34.7	35.2	33.9	35.0	35.5	34.1	35.7	33.6
New entrants	8.0	8.4	8.6	7.5	8.6	8.4	8.4	8.6	8.8	8.6	8.1	8.5	8.5	8.7	8.2
Percent of civilian labor force															
Job losers[1]	2.5	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.1	2.2	2.0	2.0	2.2	1.9	2.0
Job leavers	.6	.6	.6	.6	.6	.7	.6	.5	.5	.5	.6	.6	.5	.5	.5
Reentrants	1.9	1.7	1.7	1.7	1.7	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5
New entrants	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4

[1] Includes persons who completed temporary jobs.

9. Unemployment rates by sex and age, monthly data seasonally adjusted

[Civilian workers]

Sex and age	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Total, 16 years and over	5.4	4.9	4.8	5.0	4.9	4.9	4.9	4.8	4.6	4.7	4.7	4.6	4.7	4.3	4.3
16 to 24 years	12.0	11.3	11.0	11.4	11.0	11.3	11.2	11.1	10.9	10.6	10.8	10.8	10.7	9.5	10.0
16 to 19 years	16.7	16.0	15.7	16.5	16.3	16.2	16.4	15.5	15.2	14.3	14.1	14.7	15.0	13.1	14.2
16 to 17 years	18.9	18.2	18.3	17.3	17.9	17.9	19.3	17.5	17.6	17.7	17.3	18.5	16.9	15.2	15.8
18 to 19 years	15.2	14.5	13.9	15.9	15.5	15.4	14.5	14.1	13.6	11.7	11.6	11.3	13.7	11.6	13.2
20 to 24 years	9.3	8.5	8.2	8.4	7.9	8.4	8.2	8.5	8.4	8.5	8.9	8.5	8.0	7.4	7.6
25 years and over	4.2	3.8	3.7	3.8	3.7	3.7	3.7	3.6	3.4	3.6	3.5	3.5	3.6	3.2	3.3
25 to 54 years	4.3	3.9	3.9	3.9	3.8	3.8	3.8	3.7	3.5	3.7	3.6	3.6	3.8	3.3	3.4
55 years and over	3.4	3.0	2.9	3.1	3.0	3.0	3.1	2.8	2.8	2.8	2.7	2.7	2.9	2.5	2.4
Men, 16 years and over	5.4	4.9	4.5	5.0	4.8	4.8	4.8	4.8	4.5	4.7	4.5	4.5	4.6	4.0	4.2
16 to 24 years	12.6	11.8	10.7	11.9	11.5	11.9	12.0	12.0	11.6	11.1	11.2	11.7	11.2	9.7	11.0
16 to 19 years	18.1	16.9	15.7	18.2	17.2	17.3	17.2	16.3	15.6	14.2	16.4	17.0	16.5	14.0	16.0
16 to 17 years	20.8	19.1	18.5	19.7	18.8	18.1	18.8	18.2	18.2	18.4	18.3	21.0	18.5	14.9	17.9
18 to 19 years	16.3	15.4	14.0	17.4	16.1	17.3	16.1	14.8	14.1	11.1	14.9	13.1	15.2	13.3	14.8
20 to 24 years	9.5	8.9	7.8	8.3	8.3	8.8	9.1	9.5	9.3	9.3	8.1	8.7	8.1	7.3	8.1
25 years and over	4.1	3.6	3.5	3.7	3.6	3.6	3.5	3.5	3.2	3.5	3.3	3.2	3.4	3.0	3.0
25 to 54 years	4.2	3.7	3.6	3.8	3.7	3.6	3.6	3.6	3.3	3.6	3.4	3.2	3.5	3.0	3.1
55 years and over	3.3	3.1	2.9	3.1	3.0	3.1	3.0	3.0	2.9	3.4	3.1	2.9	3.1	2.6	2.4
Women, 16 years and over	5.4	5.0	5.1	5.0	5.0	5.0	5.0	4.7	4.7	4.6	4.8	4.8	4.9	4.6	4.4
16 to 24 years	11.3	10.7	11.3	10.8	10.4	10.6	10.4	10.1	10.1	10.2	10.4	9.8	10.1	9.2	9.0
16 to 19 years	15.2	15.0	15.6	14.7	15.3	15.0	15.5	14.7	14.7	14.3	11.6	12.3	13.4	12.1	12.3
16 to 17 years	16.9	17.2	18.1	14.7	16.9	17.7	19.8	16.7	17.0	17.0	16.3	16.0	15.2	15.5	13.5
18 to 19 years	14.0	13.6	13.9	14.2	14.8	13.3	12.8	13.4	13.0	12.4	8.2	9.5	12.2	9.8	11.4
20 to 24 years	9.0	8.1	8.7	8.5	7.5	7.9	7.3	7.4	7.4	7.6	9.7	8.3	7.9	7.5	6.9
25 years and over	4.3	3.9	4.0	3.9	3.9	3.9	4.0	3.7	3.6	3.6	3.7	3.8	3.9	3.6	3.5
25 to 54 years	4.4	4.1	4.2	4.1	4.0	4.0	4.1	3.8	3.8	3.9	3.9	4.1	4.1	3.7	3.8
55 years and over	3.5	2.9	3.0	3.1	3.0	3.0	3.2	2.7	2.6	2.1	2.3	2.4	2.6	2.4	2.4

10. Unemployment rates by State, seasonally adjusted

State	Apr. 1997	Mar. 1998	Apr. 1998[p]	State	Apr. 1997	Mar. 1998	Apr. 1998[p]
Alabama	5.2	4.2	3.7	Missouri	4.4	4.3	4.4
Alaska	8.3	6.0	5.7	Montana	5.5	5.4	5.5
Arizona	4.9	4.4	4.4	Nebraska	2.8	2.2	2.0
Arkansas	5.2	5.6	5.2	Nevada	4.2	4.7	4.7
California	6.4	6.0	5.9	New Hampshire	3.3	3.0	2.8
Colorado	3.4	3.1	3.3	New Jersey	5.1	5.1	5.1
Connecticut	5.4	4.0	3.9	New Mexico	6.2	6.4	6.1
Delaware	4.3	3.5	3.8	New York	6.5	6.1	5.8
District of Columbia	7.7	9.3	8.8	North Carolina	3.5	3.9	3.6
Florida	4.9	4.8	4.6	North Dakota	2.9	2.4	1.9
Georgia	4.7	4.0	3.9	Ohio	4.7	4.3	3.8
Hawaii	6.6	5.8	5.3	Oklahoma	4.3	3.6	3.7
Idaho	5.4	5.2	5.1	Oregon	6.0	4.9	5.1
Illinois	4.6	4.5	4.2	Pennsylvania	5.4	4.8	4.3
Indiana	3.4	3.4	2.8	Rhode Island	5.5	5.1	4.9
Iowa	3.4	2.6	2.4	South Carolina	4.8	2.4	2.9
Kansas	3.9	3.5	3.4	South Dakota	3.2	2.7	2.7
Kentucky	5.5	4.5	4.0	Tennessee	5.4	4.7	4.8
Louisiana	6.2	4.7	5.5	Texas	5.5	4.7	4.5
Maine	5.6	4.3	4.0	Utah	3.2	3.1	3.2
Maryland	5.1	4.7	4.4	Vermont	4.0	3.4	3.2
Massachusetts	4.2	3.7	2.9	Virginia	4.2	3.3	2.8
Michigan	4.4	3.9	3.5	Washington	5.0	4.1	4.2
Minnesota	3.5	2.9	2.5	West Virginia	7.1	6.8	6.6
Mississippi	5.7	5.8	5.3	Wisconsin	3.7	3.1	2.4
				Wyoming	5.5	4.2	4.1

[p] = preliminary

11. Employment of workers on nonfarm payrolls by State, seasonally adjusted

[In thousands]

State	Apr. 1997	Mar. 1998	Apr. 1998[p]	State	Apr. 1997	Mar. 1998	Apr. 1998[p]
Alabama	1,859.6	1,879.4	1,877.8	Missouri	2,626.3	2,651.6	2,663.4
Alaska	267.7	273.7	274.2	Montana	362.9	370.2	369.8
Arizona	1,961.2	2,045.6	2,048.0	Nebraska	848.7	873.0	877.2
Arkansas	1,100.4	1,118.9	1,123.5	Nevada	880.4	916.0	919.7
California	13,011.6	13,485.6	13,517.6	New Hampshire	565.9	570.5	573.8
Colorado	1,962.7	2,023.9	2,021.0	New Jersey	3,709.2	3,788.0	3,784.1
Connecticut	1,608.8	1,639.6	1,642.2	New Mexico	703.9	714.4	713.2
Delaware	384.8	398.0	398.2	New York	8,007.6	8,117.5	8,123.0
District of Columbia	615.9	610.9	609.9	North Carolina	3,642.6	3,735.5	3,738.6
Florida	6,371.6	6,604.1	6,622.5	North Dakota	312.1	318.1	317.9
Georgia	3,585.0	3,714.9	3,722.2	Ohio	5,373.6	5,445.3	5,446.1
Hawaii	531.5	529.0	528.2	Oklahoma	1,379.2	1,415.9	1,417.9
Idaho	506.2	516.7	516.2	Oregon	1,519.6	1,561.9	1,562.0
Illinois	5,743.2	5,834.5	5,849.3	Pennsylvania	5,383.4	5,447.2	5,452.4
Indiana	2,857.1	2,880.0	2,890.2	Rhode Island	448.5	453.7	454.9
Iowa	1,396.6	1,429.2	1,435.4	South Carolina	1,710.8	1,775.6	1,784.8
Kansas	1,259.0	1,294.4	1,298.0	South Dakota	352.0	357.3	357.7
Kentucky	1,707.7	1,738.0	1,744.2	Tennessee	2,578.6	2,623.6	2,623.4
Louisiana	1,840.2	1,879.5	1,878.4	Texas	8,533.3	8,824.5	8,858.1
Maine	548.6	561.0	561.1	Utah	987.1	1,024.3	1,025.5
Maryland	2,253.9	2,277.2	2,273.2	Vermont	277.7	280.1	281.2
Massachusetts	3,099.0	3,190.6	3,197.6	Virginia	3,212.1	3,303.6	3,309.7
Michigan	4,439.2	4,503.3	4,518.2	Washington	2,496.6	2,566.4	2,577.8
Minnesota	2,468.4	2,530.1	2,528.1	West Virginia	706.0	715.2	713.0
Mississippi	1,101.5	1,117.2	1,121.6	Wisconsin	2,636.8	2,696.5	2,702.0
				Wyoming	222.8	223.9	224.6

[p] = preliminary

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the data base.

12. Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
TOTAL	119,608	122,690	122,325	122,534	122,811	122,894	123,280	123,568	123,944	124,289	124,640	124,832	124,914	125,216	125,512
PRIVATE SECTOR	100,189	103,120	102,811	102,991	103,219	103,285	103,673	103,922	104,282	104,609	104,954	105,112	105,186	105,452	105,707
GOODS-PRODUCING	24,493	24,934	24,883	24,903	24,923	24,972	24,993	25,032	25,099	25,193	25,297	25,314	25,276	25,334	25,298
Mining	580	592	593	593	593	592	594	592	591	592	592	590	587	582	581
Metal mining	54	54	54	54	54	54	53	53	53	52	52	52	51	51	51
Oil and gas extraction	322	335	334	335	336	336	338	337	337	338	338	338	336	332	331
Nonmetallic minerals, except fuels	106	108	108	108	108	107	108	107	107	108	108	107	107	107	107
Construction	5,418	5,686	5,670	5,668	5,682	5,699	5,713	5,722	5,750	5,810	5,881	5,902	5,860	5,926	5,917
General building contractors	1,257	1,316	1,310	1,312	1,316	1,318	1,320	1,326	1,335	1,351	1,365	1,371	1,373	1,384	1,382
Heavy construction, except building	777	795	797	791	789	791	792	789	788	805	817	813	805	818	816
Special trades contractors	3,384	3,575	3,563	3,565	3,577	3,590	3,601	3,607	3,627	3,654	3,699	3,718	3,682	3,724	3,719
Manufacturing	18,495	18,657	18,620	18,642	18,648	18,681	18,686	18,718	18,758	18,791	18,824	18,822	18,829	18,826	18,800
Production workers	12,776	12,896	12,874	12,888	12,889	12,908	12,915	12,945	12,970	13,001	13,023	13,024	13,013	13,001	12,982
Durable goods	10,789	10,987	10,941	10,966	10,988	11,028	11,030	11,060	11,094	11,118	11,154	11,159	11,166	11,169	11,158
Production workers	7,386	7,539	7,504	7,524	7,536	7,573	7,573	7,598	7,621	7,644	7,669	7,676	7,669	7,664	7,648
Lumber and wood products	778	793	794	793	793	794	794	794	795	798	800	800	801	801	802
Furniture and fixtures	504	510	509	509	509	510	509	510	511	513	517	519	520	524	527
Stone, clay, and glass products	544	552	551	550	553	552	553	554	554	555	562	561	558	561	559
Primary metal industries	711	711	708	708	708	712	714	714	715	716	719	718	719	717	716
Fabricated metal products	1,449	1,475	1,473	1,474	1,472	1,478	1,480	1,485	1,488	1,491	1,496	1,497	1,497	1,498	1,496
Industrial machinery and equipment	2,115	2,163	2,154	2,160	2,165	2,172	2,175	2,185	2,191	2,196	2,200	2,202	2,205	2,202	2,200
Computer and office equipment	362	375	374	375	377	379	379	380	379	381	381	381	381	378	375
Electronic and other electrical equipment	1,661	1,688	1,676	1,684	1,690	1,694	1,698	1,702	1,707	1,712	1,719	1,720	1,722	1,720	1,716
Electronic components and accessories	617	652	646	651	655	660	664	669	672	676	680	680	681	678	675
Transportation equipment	1,785	1,842	1,824	1,835	1,840	1,862	1,852	1,861	1,878	1,878	1,882	1,886	1,887	1,889	1,887
Motor vehicles and equipment	967	985	973	979	980	998	986	990	1,005	1,001	1,002	1,004	1,002	1,004	1,000
Aircraft and parts	458	500	495	500	504	508	510	513	516	519	521	523	525	525	524
Instruments and related products	855	863	861	863	865	865	865	866	867	869	870	866	868	868	867
Miscellaneous manufacturing industries	388	389	391	390	392	390	389	388	386	388	389	390	389	389	388
Nondurable goods	7,706	7,670	7,679	7,676	7,660	7,653	7,656	7,658	7,664	7,673	7,670	7,663	7,663	7,657	7,642
Production workers	5,390	5,357	5,370	5,364	5,353	5,335	5,342	5,347	5,349	5,357	5,354	5,348	5,344	5,337	5,334
Food and kindred products	1,692	1,691	1,690	1,690	1,687	1,682	1,688	1,689	1,696	1,702	1,702	1,703	1,704	1,707	1,706
Tobacco products	41	41	41	41	42	41	40	41	42	41	40	41	41	42	41
Textile mill products	627	616	617	616	616	613	613	612	611	611	608	606	604	605	604
Apparel and other textile products	868	826	831	829	824	822	817	814	810	808	805	796	796	787	778
Paper and allied products	684	685	685	684	684	684	685	685	686	686	688	688	688	686	684
Printing and publishing	1,540	1,553	1,553	1,557	1,556	1,556	1,556	1,558	1,560	1,561	1,564	1,564	1,564	1,566	1,566
Chemicals and allied products	1,034	1,034	1,036	1,034	1,031	1,032	1,033	1,034	1,035	1,036	1,035	1,036	1,036	1,035	1,038
Petroleum and coal products	142	140	141	140	139	139	139	139	138	139	136	136	136	137	136
Rubber and miscellaneous plastics products	983	995	993	994	991	995	997	998	999	1,002	1,006	1,007	1,009	1,008	1,005
Leather and leather products	96	90	92	91	90	89	88	88	87	87	86	86	85	84	84
SERVICE-PRODUCING	95,115	97,756	97,442	97,631	97,888	97,922	98,287	98,536	98,845	99,096	99,343	99,518	99,638	99,882	100,214
Transportation and public utilities	6,253	6,395	6,399	6,405	6,411	6,264	6,435	6,453	6,456	6,451	6,473	6,494	6,504	6,512	6,534
Transportation	4,019	4,106	4,112	4,118	4,120	3,937	4,141	4,149	4,147	4,135	4,148	4,164	4,170	4,173	4,190
Railroad transportation	231	227	226	229	228	225	227	227	228	230	231	231	231	230	230
Local and interurban passenger transit	437	451	450	450	451	455	451	452	453	455	456	459	460	454	461
Trucking and warehousing	1,637	1,667	1,666	1,686	1,670	1,675	1,680	1,680	1,678	1,676	1,684	1,688	1,690	1,702	1,703
Water transportation	174	180	179	181	180	181	180	180	180	179	177	181	183	182	185
Transportation by air	1,107	1,128	1,139	1,139	1,137	981	1,147	1,154	1,151	1,138	1,142	1,145	1,146	1,146	1,149
Pipelines, except natural gas	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Transportation services	418	439	438	439	440	442	442	442	443	443	444	446	446	445	448
Communications and public utilities	2,234	2,290	2,287	2,287	2,291	2,291	2,294	2,304	2,309	2,316	2,325	2,330	2,334	2,339	2,344
Communications	1,351	1,424	1,419	1,421	1,425	1,430	1,432	1,443	1,449	1,457	1,466	1,471	1,475	1,484	1,490
Electric, gas, and sanitary services	884	866	868	866	866	861	862	861	860	859	859	859	859	855	854
Wholesale trade	6,482	6,648	6,626	6,632	6,655	6,671	6,679	6,697	6,711	6,731	6,759	6,769	6,783	6,797	6,806
Retail trade	21,597	22,011	21,952	21,987	21,987	22,043	22,078	22,105	22,206	22,245	22,280	22,283	22,259	22,328	22,417
Building materials and garden supplies	894	937	941	938	940	940	939	938	944	946	954	959	966	967	966
General merchandise stores	2,702	2,718	2,702	2,709	2,713	2,723	2,726	2,738	2,761	2,771	2,771	2,756	2,759	2,784	2,801
Department stores	2,367	2,389	2,376	2,379	2,385	2,393	2,397	2,409	2,433	2,434	2,439	2,427	2,428	2,448	2,476

See footnotes at end of table.

12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
Food stores	3,436	3,496	3,486	3,490	3,500	3,503	3,506	3,512	3,516	3,517	3,528	3,533	3,536	3,533	3,53
Automotive dealers and service stations	2,267	2,314	2,309	2,309	2,311	2,317	2,321	2,325	2,328	2,329	2,331	2,331	2,333	2,337	2,34
New and used car dealers	1,031	1,051	1,049	1,052	1,051	1,052	1,053	1,055	1,056	1,056	1,056	1,056	1,056	1,058	1,06
Apparel and accessory stores	1,098	1,098	1,095	1,095	1,093	1,098	1,100	1,103	1,105	1,103	1,108	1,100	1,098	1,104	1,10
Furniture and home furnishings stores	975	1,009	1,000	1,003	1,010	1,013	1,019	1,023	1,029	1,035	1,039	1,043	1,048	1,045	1,05
Eating and drinking places	7,517	7,636	7,637	7,646	7,616	7,633	7,641	7,630	7,666	7,682	7,685	7,694	7,645	7,680	7,71
Miscellaneous retail establishments	2,709	2,804	2,782	2,797	2,804	2,816	2,826	2,836	2,857	2,862	2,864	2,867	2,874	2,878	2,89
Finance, insurance, and real estate	6,911	7,091	7,064	7,072	7,095	7,110	7,125	7,151	7,172	7,194	7,213	7,232	7,258	7,286	7,30
Finance	3,303	3,413	3,397	3,402	3,413	3,423	3,434	3,451	3,463	3,478	3,485	3,496	3,512	3,519	3,53
Depository institutions	2,019	2,027	2,024	2,025	2,027	2,028	2,027	2,032	2,035	2,040	2,037	2,039	2,041	2,040	2,04
Commercial banks	1,458	1,460	1,459	1,458	1,459	1,460	1,459	1,462	1,464	1,466	1,463	1,464	1,465	1,461	1,46
Savings institutions	266	262	262	262	262	261	261	261	261	263	262	262	262	262	26
Nondepository institutions	522	567	563	565	567	571	576	581	582	586	589	593	602	605	61
Security and commodity brokers	553	597	591	592	598	602	606	611	616	620	625	629	633	636	63
Holding and other investment offices	210	222	219	220	221	222	225	227	230	232	234	235	236	238	24
Insurance	2,226	2,260	2,249	2,255	2,259	2,265	2,267	2,275	2,281	2,291	2,293	2,297	2,302	2,311	2,31
Insurance carriers	1,517	1,535	1,527	1,531	1,534	1,538	1,540	1,546	1,550	1,558	1,558	1,560	1,566	1,574	1,57
Insurance agents, brokers, and service	709	724	722	724	725	727	727	729	731	733	735	737	736	737	73
Real estate	1,382	1,419	1,418	1,415	1,423	1,422	1,424	1,425	1,428	1,425	1,435	1,439	1,444	1,456	1,45
Services[1]	34,454	36,040	35,887	35,992	36,148	36,225	36,363	36,484	36,638	36,795	36,932	37,020	37,106	37,195	37,34
Agricultural services	627	679	677	678	682	685	690	692	694	694	696	696	695	708	70
Hotels and other lodging places	1,715	1,744	1,741	1,738	1,738	1,740	1,745	1,754	1,754	1,754	1,762	1,756	1,755	1,768	1,76
Personal services	1,180	1,182	1,184	1,180	1,179	1,180	1,180	1,181	1,185	1,178	1,176	1,177	1,178	1,182	1,19
Business services	7,293	7,983	7,931	7,987	8,035	8,055	8,112	8,147	8,226	8,294	8,651	8,384	8,412	8,417	8,49
Services to buildings	907	937	936	938	940	937	947	948	947	955	960	961	966	963	97
Personnel supply services	2,654	2,968	2,951	2,975	3,004	2,991	3,013	3,030	3,074	3,111	3,139	3,152	3,149	3,138	3,16
Help supply services	2,352	2,646	2,631	2,652	2,673	2,657	2,686	2,694	2,741	2,783	2,804	2,820	2,819	2,802	2,82
Computer and data processing services	1,228	1,411	1,391	1,409	1,420	1,433	1,448	1,462	1,475	1,493	1,507	1,522	1,538	1,560	1,57
Auto repair services and parking	1,080	1,124	1,123	1,120	1,125	1,127	1,131	1,134	1,138	1,143	1,147	1,144	1,145	1,148	1,15
Miscellaneous repair services	372	376	375	376	377	378	378	378	379	380	381	382	382	383	38
Motion pictures	525	548	541	546	548	554	556	556	557	564	563	569	565	563	5
Amusement and recreation services	1,476	1,573	1,564	1,571	1,582	1,580	1,593	1,597	1,610	1,625	1,633	1,641	1,647	1,658	1,66
Health services	9,478	9,720	9,701	9,707	9,731	9,749	9,766	9,789	9,807	9,827	9,837	9,852	9,867	9,872	9,88
Offices and clinics of medical doctors	1,678	1,743	1,738	1,739	1,745	1,747	1,754	1,764	1,772	1,779	1,784	1,788	1,796	1,802	1,80
Nursing and personal care facilities	1,730	1,755	1,757	1,755	1,756	1,757	1,757	1,759	1,760	1,761	1,759	1,761	1,761	1,760	1,76
Hospitals	3,812	3,869	3,857	3,863	3,871	3,878	3,885	3,894	3,901	3,908	3,916	3,920	3,925	3,938	3,94
Home health care services	675	713	713	714	716	716	716	715	714	713	706	702	698	686	6
Legal services	928	947	944	945	948	949	953	956	959	963	964	967	970	972	9
Educational services	2,030	2,114	2,097	2,108	2,122	2,128	2,136	2,146	2,155	2,160	2,169	2,179	2,189	2,196	2,2
Social services	2,413	2,514	2,501	2,510	2,531	2,532	2,541	2,546	2,552	2,561	2,570	2,577	2,587	2,595	2,6
Child day care services	565	570	569	570	572	578	572	572	571	572	575	574	575	576	5
Residential care	677	717	712	716	719	720	726	728	730	736	736	741	744	746	7
Museums and botanical and zoological gardens	85	90	90	90	90	90	90	91	91	91	91	92	92	92	
Membership organizations	2,201	2,248	2,250	2,250	2,253	2,252	2,250	2,252	2,247	2,255	2,260	2,261	2,263	2,266	2,2
Engineering and management services	2,844	3,005	2,974	2,993	3,013	3,032	3,048	3,070	3,089	3,111	3,137	3,148	3,164	3,179	3,2
Engineering and architectural services	836	869	862	866	870	873	876	881	885	892	897	899	904	911	9
Management and public relations	870	944	931	940	949	959	962	970	975	988	1,004	1,007	1,012	1,012	1,0
Government	19,419	19,570	19,514	19,543	19,592	19,609	19,607	19,646	19,662	19,680	19,686	19,720	19,728	19,764	19,8
Federal	2,757	2,699	2,704	2,697	2,691	2,691	2,684	2,690	2,689	2,688	2,670	2,676	2,671	2,675	2,6
Federal, except Postal Service	1,901	1,842	1,850	1,843	1,839	1,833	1,827	1,829	1,826	1,819	1,822	1,819	1,815	1,815	1,8
State	4,606	4,594	4,583	4,586	4,617	4,602	4,604	4,609	4,613	4,611	4,613	4,613	4,619	4,620	4,6
Education	1,911	1,912	1,904	1,910	1,933	1,917	1,921	1,922	1,923	1,924	1,924	1,924	1,928	1,926	1,9
Other State government	2,695	2,682	2,679	2,676	2,684	2,685	2,683	2,687	2,690	2,687	2,689	2,689	2,691	2,694	2,7
Local	12,056	12,276	12,227	12,260	12,284	12,316	12,319	12,347	12,360	12,381	12,403	12,431	12,438	12,469	12,5
Education	6,748	6,913	6,874	6,894	6,913	6,933	6,941	6,947	6,959	6,965	6,980	6,999	7,003	7,023	7,0
Other local government	5,308	5,363	5,353	5,366	5,371	5,383	5,378	5,400	5,401	5,416	5,423	5,432	5,435	5,446	5,4

[1] Includes other industries not shown separately.

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

13. Average weekly hours of production or nonsupervisory workers on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
PRIVATE SECTOR	34.4	34.6	34.7	34.5	34.5	34.7	34.6	34.6	34.7	34.7	34.8	34.7	34.6	34.5	34.7
GOODS-PRODUCING	41.1	41.3	41.4	41.2	41.3	41.3	41.3	41.3	41.2	41.4	41.6	41.4	41.0	40.8	41.0
MINING	45.3	45.4	45.8	45.6	45.3	45.6	45.1	45.2	45.2	44.9	45.4	44.4	43.8	44.2	44.6
MANUFACTURING	41.6	42.0	42.0	41.9	41.9	41.9	41.9	42.0	42.1	42.2	42.1	42.0	41.8	41.4	41.7
Overtime hours	4.5	4.8	4.9	4.7	4.8	4.8	4.7	4.8	4.9	4.9	4.9	4.8	4.8	4.5	4.6
Durable goods	42.4	42.8	42.9	42.7	42.7	42.8	42.7	42.8	42.9	43.0	42.8	42.8	42.5	41.9	42.2
Overtime hours	4.8	5.1	5.2	5.0	5.1	5.1	5.0	5.1	5.2	5.2	5.2	5.1	5.0	4.6	4.8
Lumber and wood products	40.8	41.0	41.1	41.3	41.2	41.0	40.9	41.0	41.1	41.0	41.2	41.1	41.2	41.2	41.1
Furniture and fixtures	39.4	40.2	40.3	40.0	40.0	40.2	40.4	40.4	40.6	40.7	41.0	41.0	40.7	40.7	40.9
Stone, clay, and glass products	43.3	43.2	43.3	43.0	43.2	43.1	43.2	43.2	42.9	43.6	43.7	43.6	43.2	43.3	43.7
Primary metal industries	44.2	44.9	44.9	44.8	44.6	45.0	45.0	45.2	45.2	45.2	45.2	44.8	44.6	43.9	44.2
Blast furnaces and basic steel products	44.5	44.9	44.9	44.7	44.3	45.1	45.0	45.4	45.3	45.4	46.0	45.4	45.3	44.8	45.5
Fabricated metal products	42.4	42.6	42.6	42.5	42.5	42.5	42.5	42.6	42.7	42.9	42.7	42.7	42.4	41.8	41.2
Industrial machinery and equipment	43.1	43.6	43.6	43.4	43.5	43.5	43.5	43.6	43.7	43.7	43.6	43.4	43.3	42.6	43.1
Electronic and other electrical equipment	41.5	42.0	42.1	42.0	42.1	41.9	41.8	41.9	42.0	42.0	41.8	41.9	41.4	41.0	41.4
Transportation equipment	44.0	44.5	44.5	44.3	44.1	44.4	44.0	44.3	44.1	44.5	43.9	43.8	43.4	42.1	43.4
Motor vehicles and equipment	44.9	45.0	45.1	44.9	44.4	44.9	44.3	44.6	44.5	44.9	43.9	43.8	43.5	42.0	43.3
Instruments and related products	41.7	42.0	42.0	41.9	41.8	42.2	42.0	42.0	42.2	41.9	41.9	42.0	41.5	41.3	41.4
Miscellaneous manufacturing	39.7	40.4	40.2	40.2	40.4	40.2	40.3	40.4	40.5	40.6	40.4	40.4	40.5	40.1	39.9
Nondurable goods	40.5	40.9	40.8	40.7	40.7	40.7	40.8	40.9	41.0	41.0	41.1	40.9	40.8	40.7	40.8
Overtime hours	4.1	4.4	4.4	4.2	4.3	4.3	4.3	4.4	4.5	4.4	4.4	4.4	4.4	4.2	4.4
Food and kindred products	41.0	41.3	41.4	41.0	41.2	41.2	41.2	41.3	41.5	41.6	41.8	41.5	41.5	41.2	41.6
Textile mill products	40.6	41.4	41.4	41.3	41.4	41.3	41.5	41.5	41.5	41.7	41.8	41.5	41.2	41.0	41.3
Apparel and other textile products	37.0	37.3	37.2	37.3	37.1	37.1	37.3	37.3	37.2	37.5	37.4	37.4	37.2	37.7	37.5
Paper and allied products	43.3	43.7	43.8	43.5	43.5	43.5	43.6	43.7	44.0	43.7	43.6	43.4	43.4	43.0	43.6
Printing and publishing	38.2	38.5	38.4	38.3	38.4	38.3	38.6	38.6	38.8	38.6	38.5	38.5	38.4	38.2	38.3
Chemicals and allied products	43.2	43.2	43.3	43.1	43.1	43.3	43.3	43.4	43.4	43.2	43.5	43.4	43.4	43.0	42.1
Rubber and miscellaneous plastics products	41.5	41.8	41.7	41.6	41.7	41.8	41.7	42.1	42.0	42.1	42.0	41.8	41.5	41.6	42.0
Leather and leather products	38.1	38.4	38.3	38.3	38.3	38.1	38.4	38.3	38.2	38.4	38.3	38.8	37.9	37.5	37.8
SERVICE-PRODUCING	32.7	32.9	32.9	32.7	32.7	32.9	32.8	32.9	32.9	32.9	33.0	33.0	32.8	32.9	33.0
TRANSPORTATION AND PUBLIC UTILITIES	39.6	39.7	39.6	39.5	39.3	40.1	39.9	39.8	39.9	39.9	40.0	39.9	39.8	39.6	40.0
WHOLESALE TRADE	38.3	38.4	38.6	38.4	38.3	38.4	38.4	38.4	38.5	38.3	38.5	38.5	38.3	38.3	38.5
RETAIL TRADE	28.8	28.9	28.9	28.8	28.9	29.0	28.9	29.0	29.0	28.9	29.0	29.0	28.9	29.0	29.1

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

14. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry, seasonally adjusted

Industry	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
PRIVATE SECTOR (In current dollars)	$ 11.82	$ 12.28	$12.21	$12.24	$12.27	$12.34	$12.37	$12.43	$12.47	$12.50	$12.54	$12.59	$12.63	$12.69	$12.73
Goods-producing	13.47	13.92	13.85	13.86	13.89	13.95	13.98	14.05	14.10	14.15	14.16	14.21	14.25	14.26	14.28
Mining	15.62	16.17	16.09	16.14	16.15	16.16	16.24	16.37	16.48	16.46	16.47	16.76	16.82	16.70	16.80
Construction	15.47	16.03	15.93	15.97	15.99	16.06	16.10	16.17	16.24	16.34	16.27	16.34	16.40	16.46	16.49
Manufacturing	12.77	13.17	13.10	13.11	13.13	13.20	13.22	13.30	13.34	13.37	13.38	13.42	13.46	13.44	13.47
Excluding overtime	12.12	12.45	12.38	12.42	12.42	12.49	12.50	12.58	12.61	12.63	12.66	12.69	12.73	12.76	12.77
Service-producing	11.26	11.73	11.66	11.70	11.73	11.80	11.83	11.88	11.93	11.95	12.00	12.06	12.10	12.18	12.22
Transportation and public utilities	14.45	14.93	14.83	14.89	14.99	15.02	15.01	15.05	15.10	15.16	15.21	15.25	15.27	15.31	15.30
Wholesale trade	12.87	13.44	13.37	13.37	13.45	13.56	13.54	13.63	13.72	13.71	13.75	13.81	13.84	13.90	14.01
Retail trade	7.99	8.34	8.28	8.30	8.33	8.37	8.42	8.46	8.49	8.51	8.56	8.59	8.64	8.71	8.74
Finance, insurance, and real estate	12.80	13.33	13.25	13.31	13.36	13.51	13.53	13.60	13.65	13.66	13.72	13.83	13.85	14.00	14.01
Services	11.79	12.28	12.22	12.26	12.28	12.35	12.38	12.43	12.48	12.50	12.54	12.60	12.65	12.74	12.79
PRIVATE SECTOR (In constant (1982) dollars)	7.43	7.55	7.53	7.54	7.55	7.58	7.58	7.60	7.62	7.63	7.66	7.69	7.72	7.73	–

– Data not available.

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

15. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry

Industry	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
PRIVATE SECTOR	$ 11.82	$ 12.28	$12.18	$12.18	$12.17	$12.22	$12.49	$12.45	$12.53	$12.53	$12.60	$12.65	$12.68	$12.69	$12.70
MINING	15.62	16.17	16.01	16.14	16.07	15.98	16.26	16.23	16.41	16.52	16.65	16.89	16.89	16.82	16.76
CONSTRUCTION	15.47	16.03	15.86	15.91	16.03	16.12	16.30	16.33	16.28	16.37	16.25	16.21	16.29	16.35	16.45
MANUFACTURING	12.77	13.17	13.08	13.09	13.10	13.14	13.23	13.28	13.36	13.47	13.40	13.41	13.47	13.46	13.47
Durable goods	13.33	13.73	13.63	13.65	13.61	13.71	13.81	13.88	13.95	14.07	13.96	13.96	14.02	13.96	13.98
Lumber and wood products	10.44	10.77	10.72	10.78	10.83	10.81	10.87	10.87	10.91	10.93	10.90	10.91	10.95	10.99	11.06
Furniture and fixtures	10.15	10.55	10.47	10.51	10.53	10.59	10.70	10.67	10.69	10.79	10.75	10.77	10.80	10.86	10.78
Stone, clay, and glass products	12.82	13.18	13.12	13.13	13.20	13.21	13.27	13.32	13.36	13.39	13.39	13.45	13.46	13.63	13.55
Primary metal industries	14.97	15.22	15.09	15.16	15.28	15.16	15.27	15.33	15.38	15.42	15.47	15.46	15.52	15.65	15.60
Blast furnaces and basic steel products	17.80	18.03	17.87	18.03	18.13	18.00	18.30	18.26	18.28	18.15	18.33	18.34	18.32	18.66	18.55
Fabricated metal products	12.50	12.79	12.74	12.72	12.66	12.75	12.81	12.86	12.93	13.03	12.99	12.98	13.01	12.90	12.68
Industrial machinery and equipment	13.59	14.07	13.94	13.96	14.02	14.03	14.19	14.23	14.30	14.41	14.34	14.36	14.36	14.32	14.35
Electronic and other electrical equipment	12.18	12.70	12.55	12.59	12.69	12.75	12.85	12.91	13.00	13.13	13.00	12.97	13.06	13.09	13.11
Transportation equipment	17.19	17.56	17.43	17.42	17.20	17.43	17.57	17.88	17.94	18.09	17.75	17.77	17.92	17.72	17.81
Motor vehicles and equipment	17.74	18.06	17.94	17.89	17.52	17.83	18.02	18.47	18.53	18.66	18.24	18.31	18.52	18.38	18.39
Instruments and related products	13.13	13.51	13.48	13.51	13.50	13.48	13.62	13.59	13.66	13.68	13.64	13.67	13.73	13.76	13.79
Miscellaneous manufacturing	10.38	10.59	10.51	10.49	10.51	10.57	10.64	10.64	10.71	10.80	10.79	10.79	10.79	10.76	10.79
Nondurable goods	11.97	12.33	12.26	12.26	12.36	12.33	12.40	12.39	12.48	12.58	12.56	12.57	12.63	12.71	12.70
Food and kindred products	11.20	11.49	11.47	11.44	11.52	11.51	11.51	11.45	11.60	11.71	11.67	11.64	11.70	11.75	11.81
Tobacco products	19.35	19.27	20.79	21.12	20.96	19.86	18.32	18.05	17.88	18.69	18.49	18.24	18.54	18.79	20.01
Textile mill products	9.69	10.03	9.95	9.98	10.02	10.02	10.10	10.11	10.16	10.25	10.26	10.26	10.29	10.39	10.36
Apparel and other textile products	7.96	8.25	8.22	8.25	8.19	8.23	8.32	8.32	8.32	8.42	8.41	8.38	8.43	8.48	8.49
Paper and allied products	14.67	15.04	14.97	14.97	15.16	15.11	15.17	15.17	15.22	15.27	15.18	15.20	15.27	15.47	15.51
Printing and publishing	12.65	13.05	12.93	12.89	13.01	13.07	13.21	13.19	13.24	13.30	13.27	13.32	13.36	13.32	13.36
Chemicals and allied products	16.17	16.58	16.48	16.54	16.59	16.57	16.63	16.65	16.85	16.92	16.89	16.94	16.97	17.13	17.03
Petroleum and coal products	19.32	20.18	19.95	19.92	20.00	19.97	20.25	20.29	20.39	20.55	20.63	20.91	21.16	20.99	20.52
Rubber and miscellaneous plastics products	11.24	11.57	11.50	11.53	11.57	11.57	11.65	11.64	11.65	11.77	11.74	11.78	11.78	11.84	11.85
Leather and leather products	8.57	8.98	8.92	8.91	8.75	8.87	9.07	9.13	9.10	9.18	9.29	9.25	9.32	9.32	9.42
TRANSPORTATION AND PUBLIC UTILITIES	14.45	14.93	14.76	14.78	14.95	15.00	15.01	15.04	15.14	15.12	15.22	15.23	15.24	15.26	15.20
WHOLESALE TRADE	12.87	13.44	13.33	13.36	13.37	13.47	13.52	13.56	13.74	13.71	13.76	13.84	13.86	13.92	13.97
RETAIL TRADE	7.99	8.34	8.27	8.27	8.27	8.29	8.45	8.47	8.51	8.51	8.63	8.62	8.67	8.71	8.73
FINANCE, INSURANCE, AND REAL ESTATE	12.80	13.33	13.21	13.23	13.18	13.35	13.45	13.53	13.69	13.61	13.67	13.92	13.97	13.98	13.97
SERVICES	11.79	12.28	12.16	12.15	12.07	12.12	12.36	12.42	12.58	12.61	12.67	12.75	12.77	12.75	12.73

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

16. Average weekly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry

Industry	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
PRIVATE SECTOR															
Current dollars	$406.26	$424.20	$420.21	$424.73	$421.61	$427.35	$429.93	$430.08	$435.35	$434.10	$430.58	$437.00	$437.46	$434.00	$438.15
Seasonally adjusted	–	–	423.69	423.16	421.06	425.93	426.08	427.80	434.30	431.81	435.70	439.39	437.00	437.81	441.73
Constant (1982) dollars	255.51	260.89	258.86	261.53	259.45	262.50	263.12	262.89	266.11	265.83	263.35	267.11	266.65	–	–
MINING	707.13	732.76	733.26	737.84	724.56	726.86	740.09	735.03	748.57	747.00	747.45	739.72	733.03	731.67	744.14
CONSTRUCTION	602.94	622.40	629.64	627.26	641.60	638.77	650.80	647.11	614.25	627.46	606.63	613.22	617.39	621.30	646.49
MANUFACTURING															
Current dollars	531.65	553.14	548.05	550.20	540.13	552.30	561.38	560.84	569.56	579.64	561.88	559.61	561.70	547.82	560.35
Constant (1982) dollars	334.37	340.18	338.14	338.79	332.39	339.25	343.56	342.81	348.14	354.95	343.66	342.06	343.17	–	–
Durable goods	565.62	588.07	583.36	584.65	570.68	585.42	595.21	597.27	604.90	618.11	595.12	594.15	594.45	576.55	591.35
Lumber and wood products	425.95	441.16	442.74	446.96	441.46	446.04	450.69	450.69	451.26	450.32	437.78	441.45	446.76	448.39	456.78
Furniture and fixtures	399.91	424.11	416.71	419.35	415.94	428.90	439.77	434.27	440.84	454.26	436.45	436.19	436.32	431.14	434.43
Stone, clay, and glass products	555.11	569.38	573.34	572.47	571.56	578.60	586.53	584.75	575.82	585.58	565.06	572.97	572.05	584.73	597.56
Primary metal industries	661.67	683.38	674.52	679.17	670.79	678.10	691.73	691.83	700.25	711.32	702.34	691.06	690.64	679.21	689.52
Blast furnaces and basic steel products	791.66	807.75	798.79	802.35	801.39	805.06	825.35	819.90	830.38	833.52	843.63	827.61	828.06	834.10	840.32
Fabricated metal products	530.85	547.84	541.45	544.00	527.90	543.58	552.55	553.41	561.60	575.52	554.65	550.75	549.02	527.61	521.15
Industrial machinery and equipment	585.73	613.02	606.39	605.43	599.63	604.26	619.67	615.73	628.76	645.12	624.79	624.66	624.66	600.01	619.92
Electronic and other electrical equipment	505.47	533.40	524.59	528.78	522.83	531.68	540.99	540.93	553.80	565.90	543.40	539.55	540.68	527.53	540.13
Transportation equipment	756.80	783.20	779.12	778.27	730.55	773.92	781.44	799.23	800.11	828.54	779.20	774.74	783.10	733.61	780.08
Motor vehicles and equipment	769.98	814.05	816.27	811.78	740.19	798.34	806.84	834.35	831.94	865.35	800.66	798.23	813.03	757.26	811.00
Instruments and related products	547.94	569.10	562.12	567.75	557.85	569.19	575.09	571.10	583.62	589.02	571.82	577.61	572.54	558.66	568.15
Miscellaneous manufacturing	412.09	428.24	420.40	421.05	415.54	425.97	434.52	464.52	441.66	446.45	431.32	434.16	437.00	423.94	429.44
Nondurable goods	484.79	504.71	497.76	499.39	499.75	504.30	513.36	509.64	517.92	525.84	514.11	510.75	514.04	508.40	515.62
Food and kindred products	459.20	474.54	470.27	467.16	473.47	479.97	486.87	478.61	489.52	496.93	483.14	476.08	478.53	473.53	487.75
Tobacco products	773.60	746.88	804.57	827.12	739.54	747.68	716.69	712.62	702.31	745.46	692.50	676.94	685.98	693.35	774.39
Textile mill products	393.41	414.83	409.94	415.75	406.41	416.42	423.78	418.14	425.29	431.10	426.40	421.28	423.95	416.64	425.80
Apparel and other textile products	294.52	308.55	304.96	311.85	300.12	307.80	313.21	312.83	131.21	320.80	313.69	310.90	313.60	309.52	318.38
Paper and allied products	635.21	658.12	649.70	650.57	657.29	656.64	669.88	665.32	676.66	681.93	664.24	654.89	658.14	657.48	673.13
Printing and publishing	483.23	502.81	492.63	490.20	495.68	504.50	518.22	513.48	519.40	521.36	504.26	509.21	513.02	503.50	507.68
Chemicals and allied products	698.54	716.26	710.29	712.87	708.39	712.51	723.41	720.95	736.35	744.04	733.03	733.50	736.50	733.16	715.26
Petroleum and coal products	842.35	870.62	845.88	855.43	854.85	859.57	876.83	878.56	885.36	869.69	918.93	882.82	914.11	900.47	870.05
Rubber and miscellaneous plastics products	466.46	483.63	479.55	480.80	474.37	482.47	489.30	487.72	495.13	506.11	493.08	490.05	488.87	484.26	495.33
Leather and leather products	326.14	343.68	340.74	345.71	330.75	340.61	353.73	352.42	350.35	356.18	350.23	350.58	351.36	342.04	357.02
TRANSPORTATION AND PUBLIC UTILITIES	571.82	591.13	580.07	588.24	589.03	607.50	603.40	598.59	610.14	601.78	596.62	606.15	600.46	596.67	603.44
WHOLESALE TRADE	492.92	515.71	513.21	517.03	512.07	518.60	519.17	520.70	531.74	526.48	524.26	532.84	532.22	530.35	536.45
RETAIL TRADE	230.11	241.03	238.18	243.14	244.50	246.21	245.05	243.94	245.09	248.49	242.50	247.39	248.83	249.98	253.17
FINANCE, INSURANCE, AND REAL ESTATE	459.16	480.49	474.24	484.22	471.84	481.94	481.51	485.73	502.42	488.60	493.49	516.43	514.10	504.68	504.32
SERVICES	382.00	400.33	393.98	398.52	395.90	398.75	401.70	404.89	412.62	411.09	410.51	418.20	417.58	413.10	413.73

– Data not available.
[p] = preliminary.
NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

17. Diffusion indexes of employment change, seasonally adjusted

[In percent]

Timespan and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
	Private nonfarm payrolls, 356 industries											
Over 1-month span:												
1995	62.5	60.0	54.9	55.6	47.8	55.6	54.8	59.0	58.0	55.8	54.5	58.8
1996	50.8	64.6	59.6	56.6	62.8	61.0	57.3	61.5	56.0	62.5	62.2	60.7
1997	58.0	61.4	59.8	63.6	60.1	54.6	61.1	59.1	60.0	64.3	62.4	64.9
1998	63.8	58.7	59.6	56.3	54.5	–	–	–	–	–	–	–
Over 3-month span:												
1995	63.6	61.4	59.4	53.1	55.2	53.2	59.7	60.1	59.1	58.0	56.6	54.6
1996	61.9	62.8	64.0	63.8	63.5	64.9	64.2	61.5	63.9	64.2	67.0	66.6
1997	64.9	63.3	65.6	66.2	63.9	61.2	60.1	65.9	67.4	68.1	70.8	71.9
1998	68.4	67.3	64.3	60.1	–	–	–	–	–	–	–	–
Over 6-month span:												
1995	66.4	60.1	59.1	57.3	59.0	60.1	57.6	60.4	59.7	59.3	61.1	63.2
1996	62.8	65.4	64.7	65.7	66.2	65.0	66.4	66.0	66.2	67.6	66.9	66.3
1997	67.6	67.0	65.3	64.9	65.6	67.3	68.0	67.3	70.6	72.3	73.3	72.6
1998	72.2	69.5	–	–	–	–	–	–	–	–	–	–
Over 12-month span:												
1995	63.6	62.4	62.6	63.3	61.7	61.9	58.7	62.2	62.2	61.5	63.5	65.4
1996	64.5	66.7	64.5	65.6	68.5	67.3	67.7	66.4	68.0	69.9	69.1	68.3
1997	69.8	67.6	69.2	70.1	69.8	69.8	71.2	71.2	71.1	72.3	71.6	–
	Manufacturing payrolls, 139 industries											
Over 1-month span:												
1995	54.7	54.3	46.4	53.2	42.4	44.2	46.4	49.6	48.6	52.2	45.3	48.2
1996	42.8	54.7	48.2	42.1	55.4	50.7	47.1	55.4	47.8	52.9	54.3	55.4
1997	49.3	54.3	50.0	56.8	51.4	52.2	50.4	48.9	56.5	57.2	56.1	60.8
1998	55.8	51.8	52.5	47.8	43.5	–	–	–	–	–	–	–
Over 3-month span:												
1995	56.8	50.0	47.8	42.1	43.2	38.8	40.6	43.5	48.2	47.1	45.3	39.9
1996	43.9	46.8	46.0	47.5	46.4	49.3	51.4	50.0	53.6	51.1	57.6	54.7
1997	54.3	49.3	54.3	54.0	55.4	50.4	47.5	52.2	57.9	62.6	64.7	65.5
1998	60.1	59.0	51.1	45.3	–	–	–	–	–	–	–	–
Over 6-month span:												
1995	55.4	46.4	42.8	40.3	41.4	42.4	41.0	41.0	43.9	43.2	43.2	45.3
1996	42.1	45.3	46.4	47.1	48.2	48.6	51.1	50.4	52.9	52.9	53.2	52.2
1997	54.3	54.3	51.4	52.9	51.4	55.0	56.8	57.6	60.4	64.4	67.6	65.8
1998	62.2	55.8	–	–	–	–	–	–	–	–	–	–
Over 12-month span:												
1995	46.0	44.2	46.0	47.8	41.0	41.7	38.5	38.8	36.3	38.5	39.9	44.6
1996	43.5	47.5	45.3	45.3	50.4	49.6	50.4	48.6	51.1	55.0	54.0	51.8
1997	57.2	52.5	54.7	56.5	57.9	57.6	58.6	58.6	60.4	59.7	57.6	–

– Data not available.

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing employment. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

18. Annual data: Employment status of the population

[Numbers in thousands]

Employment status	1989	1990	1991	1992	1993	1994	1995	1996	1997
Civilian noninstitutional population	186,393	189,164	190,925	192,805	194,838	196,814	198,584	200,591	203,133
Civilian labor force	123,869	125,840	126,346	128,105	129,200	131,056	132,304	133,943	136,297
Labor force participation rate	66.5	66.5	66.2	66.4	66.3	66.6	66.6	66.8	67.1
Employed	117,342	118,793	117,718	118,492	120,259	123,060	124,900	126,708	129,558
Employment-population ratio	63.0	62.8	61.7	61.5	61.7	62.5	62.9	63.2	63.8
Agriculture	3,199	3,223	3,269	3,247	3,115	3,409	3,440	3,443	3,399
Nonagricultural industries	114,142	115,570	114,499	115,245	117,144	119,651	121,460	123,264	126,159
Unemployed	6,528	7,047	8,628	9,613	8,940	7,996	7,404	7,236	6,739
Unemployment rate	5.3	5.6	6.8	7.5	6.9	6.1	5.6	5.4	4.9
Not in the labor force	62,523	63,324	64,578	64,700	65,638	65,758	66,280	66,647	66,837

19. Annual data: Employment levels by industry

[In thousands]

Industry	1989	1990	1991	1992	1993	1994	1995	1996	1997
Total employment	107,884	109,403	108,249	108,601	110,713	114,163	117,191	119,608	122,690
Private sector	90,105	91,098	89,847	89,956	91,872	95,036	97,885	100,189	103,120
Goods-producing	25,254	24,905	23,745	23,231	23,352	23,908	24,265	24,493	24,934
Mining	692	709	689	635	610	601	581	580	592
Construction	5,171	5,120	4,650	4,492	4,668	4,986	5,160	5,418	5,686
Manufacturing	19,391	19,076	18,406	18,104	18,075	18,321	18,524	18,495	18,657
Service-producing	82,630	84,497	84,504	85,370	87,361	90,256	92,925	95,115	97,756
Transportation and public utilities	5,614	5,777	5,755	5,718	5,811	5,984	6,132	6,253	6,395
Wholesale trade	6,187	6,173	6,081	5,997	5,981	6,162	6,378	6,482	6,648
Retail trade	19,475	19,601	19,284	19,356	19,773	20,507	21,187	21,597	22,011
Finance, insurance, and real estate	6,668	6,709	6,646	6,602	6,757	6,896	6,806	6,911	7,091
Services	26,907	27,934	28,336	29,052	30,197	31,579	33,117	34,454	36,040
Government	17,779	18,304	18,402	18,645	18,841	19,128	19,305	19,419	19,570
Federal	2,988	3,085	2,966	2,969	2,915	2,870	2,822	2,757	2,699
State	4,182	4,305	4,355	4,408	4,488	4,576	4,635	4,606	4,594
Local	10,609	10,914	11,081	11,267	11,438	11,682	11,849	12,056	12,276

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

20. Annual data: Average hours and earnings of production or nonsupervisory workers on nonfarm payrolls, by industry

Industry	1989	1990	1991	1992	1993	1994	1995	1996	1997
Private sector:									
Average weekly hours	34.6	34.5	34.3	34.4	34.5	34.7	34.5	34.4	34.6
Average hourly earnings (in dollars)	9.66	10.01	10.32	10.57	10.83	11.12	11.43	11.82	12.28
Average weekly earnings (in dollars)	334.24	345.35	353.98	363.61	373.64	385.86	394.34	406.61	424.89
Mining:									
Average weekly hours	43.0	44.1	44.4	43.9	44.3	44.8	44.7	45.3	45.4
Average hourly earnings (in dollars)	13.26	13.68	14.19	14.54	14.60	14.88	15.30	15.62	16.17
Average weekly earnings (in dollars)	570.18	603.29	630.04	638.31	646.78	666.62	683.91	707.59	734.12
Construction:									
Average weekly hours	37.9	38.2	38.1	38.0	38.5	38.9	38.9	39.0	38.9
Average hourly earnings (in dollars)	13.54	13.77	14.00	14.15	14.38	14.73	15.09	15.47	16.03
Average weekly earnings (in dollars)	513.17	526.01	533.40	537.70	553.63	573.00	587.00	603.33	623.57
Manufacturing:									
Average weekly hours	41.0	40.8	40.7	41.0	41.4	42.0	41.6	41.6	42.0
Average hourly earnings (in dollars)	10.48	10.83	11.18	11.46	11.74	12.07	12.37	12.77	13.17
Average weekly earnings (in dollars)	429.68	441.86	455.03	469.86	486.04	506.94	514.59	531.23	553.14
Transportation and public utilities:									
Average weekly hours	38.3	38.4	38.1	38.3	39.3	39.7	39.4	39.6	39.7
Average hourly earnings (in dollars)	12.57	12.92	13.20	13.43	13.55	13.78	14.13	14.45	14.93
Average weekly earnings (in dollars)	481.43	496.13	502.92	514.37	532.52	547.07	556.72	572.22	592.72
Wholesale trade:									
Average weekly hours	38.0	38.1	38.1	38.2	38.2	38.4	38.3	38.3	38.4
Average hourly earnings (in dollars)	10.39	10.79	11.15	11.39	11.74	12.06	12.43	12.87	13.44
Average weekly earnings (in dollars)	394.82	411.10	424.82	435.10	448.47	463.10	476.07	492.92	516.10
Retail trade:									
Average weekly hours	28.9	28.8	28.6	28.8	28.8	28.9	28.8	28.8	28.9
Average hourly earnings (in dollars)	6.53	6.75	6.94	7.12	7.29	7.49	7.69	7.99	8.34
Average weekly earnings (in dollars)	188.72	194.40	198.48	205.06	209.95	216.46	221.47	230.11	241.03
Finance, insurance, and real estate:									
Average weekly hours	35.8	35.8	35.7	35.8	35.8	35.8	35.9	35.9	36.1
Average hourly earnings (in dollars)	9.53	9.97	10.39	10.82	11.35	11.83	12.32	12.80	13.33
Average weekly earnings (in dollars)	341.17	356.93	370.92	387.36	406.33	423.51	442.29	459.52	481.21
Services:									
Average weekly hours	32.6	32.5	32.4	32.5	32.5	32.5	32.4	32.4	32.6
Average hourly earnings (in dollars)	9.38	9.83	10.23	10.54	10.78	11.04	11.39	11.79	12.28
Average weekly earnings (in dollars)	305.79	319.48	331.45	342.55	350.35	358.80	369.04	382.00	400.33

21. Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	1996				1997				1998	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1998	
Civilian workers[2]	128.3	129.2	130.2	130.9	132.0	132.8	134.1	135.2	136.3	0.8	3.3
Workers, by occupational group:											
White-collar workers	129.1	130.0	131.3	131.9	133.1	133.9	135.2	136.5	137.7	.9	3.5
Professional specialty and technical	130.6	131.4	132.6	133.1	133.7	134.6	135.8	136.7	137.5	.6	2.8
Executive, administrative, and managerial	128.5	129.1	131.1	131.5	133.2	134.0	135.3	137.3	139.1	1.3	4.4
Administrative support, including clerical	130.1	130.8	132.0	132.6	133.6	134.6	135.8	136.9	138.0	.8	3.3
Blue-collar workers	126.7	127.7	128.3	129.1	129.8	130.9	131.8	132.4	133.2	.6	2.6
Service occupations	128.0	128.7	129.7	131.0	132.0	132.7	134.6	135.6	136.9	1.0	3.7
Workers, by industry division:											
Goods-producing	128.3	129.3	130.1	130.9	131.5	132.7	133.6	134.1	135.1	.7	2.7
Manufacturing	129.3	130.4	131.3	132.1	132.6	133.8	134.6	135.3	136.4	.8	2.9
Service-producing	128.2	129.1	130.2	130.9	132.1	132.9	134.2	135.5	136.8	1.0	3.6
Services	130.4	131.2	132.5	133.2	134.1	134.9	136.5	137.6	138.3	.5	3.1
Health services	132.5	133.4	134.1	134.4	135.2	135.7	136.7	137.9	138.0	.1	2.1
Hospitals	132.3	132.9	133.6	133.8	134.2	134.6	135.6	136.7	137.1	.3	2.2
Educational services	130.5	130.8	133.2	133.9	134.0	134.2	136.5	137.0	137.5	.4	2.6
Public administration[3]	129.2	129.6	130.7	131.8	133.0	133.0	134.1	135.1	136.4	1.0	2.6
Nonmanufacturing	127.9	128.8	129.8	130.5	131.7	132.5	133.8	135.1	136.2	.8	3.4
Private industry workers	127.9	129.0	129.8	130.6	131.7	132.8	133.9	135.1	136.3	.9	3.5
Excluding sales occupations	128.3	129.2	130.2	130.8	131.9	133.0	134.1	135.2	136.4	.9	3.4
Workers, by occupational group:											
White-collar workers	129.0	130.0	131.1	131.7	133.1	134.1	135.2	136.7	138.1	1.0	3.8
Excluding sales occupations	129.9	130.7	132.0	132.5	133.7	134.8	135.9	137.4	138.8	1.0	3.8
Professional specialty and technical occupations	131.6	132.6	133.3	133.7	134.6	135.9	136.7	137.8	138.8	.7	3.1
Executive, administrative, and managerial occupations	128.0	128.8	130.9	131.3	133.0	133.9	135.2	137.4	139.4	1.5	4.8
Sales occupations	124.8	126.9	126.7	128.1	130.1	130.7	132.2	133.5	135.3	1.3	4.0
Administrative support occupations, including clerical	130.1	130.8	132.0	132.5	133.7	134.7	135.9	137.0	138.2	.9	3.4
Blue-collar workers	126.6	127.6	128.1	129.0	129.6	130.8	131.7	132.3	133.1	.6	2.7
Precision production, craft, and repair occupations	126.5	127.7	128.2	129.1	129.6	130.9	131.7	131.9	132.9	.8	2.5
Machine operators, assemblers, and inspectors	127.1	128.1	128.7	129.5	130.0	131.2	132.2	133.0	133.6	.5	2.8
Transportation and material moving occupations	123.9	124.7	124.9	125.2	126.1	126.8	128.0	128.9	129.3	.3	2.5
Handlers, equipment cleaners, helpers, and laborers	128.5	129.3	130.0	131.3	132.8	133.4	134.2	135.8	137.0	.9	3.2
Service occupations	125.8	126.5	127.4	128.9	129.8	130.9	133.1	134.1	135.3	.9	4.2
Production and nonsupervisory occupations[4]	127.5	128.6	129.2	130.0	131.1	132.1	133.2	134.2	135.3	.8	3.2
Workers, by industry division:											
Goods-producing	128.2	129.3	130.1	130.9	131.4	132.7	133.6	134.1	135.1	.7	2.8
Excluding sales occupations	128.0	129.0	129.8	130.5	131.1	132.3	133.1	133.6	134.5	.7	2.6
White-collar occupations	130.0	131.0	132.2	132.9	133.5	134.8	135.6	136.2	137.7	1.1	3.1
Excluding sales occupations	129.4	130.2	131.5	132.1	132.6	133.8	134.5	135.0	136.3	1.0	2.8
Blue-collar occupations	127.1	128.3	128.9	129.6	130.2	131.4	132.4	132.8	133.5	.5	2.5
Construction	124.3	125.3	125.9	126.4	127.2	128.7	129.7	129.7	130.6	.7	2.7
Manufacturing	129.3	130.4	131.3	132.1	132.6	133.8	134.6	135.3	136.4	.8	2.9
White-collar occupations	130.5	131.6	132.8	133.6	133.9	135.2	135.8	136.7	138.2	1.1	3.2
Excluding sales occupations	129.5	130.5	131.8	132.5	132.8	133.8	134.5	135.3	136.5	.9	2.8
Blue-collar occupations	128.4	129.5	130.2	131.1	131.7	132.8	133.7	134.3	135.0	.5	2.5
Durables	129.7	131.2	131.9	132.6	133.0	134.1	135.0	135.7	136.5	.6	2.6
Nondurables	128.3	128.9	130.0	131.0	131.7	133.0	133.7	134.5	135.9	1.0	3.2
Service-producing	127.6	128.6	129.5	130.2	131.6	132.5	133.8	135.3	136.7	1.0	3.9
Excluding sales occupations	128.4	129.2	130.3	130.9	132.2	133.3	134.5	136.1	137.4	1.0	3.9
White-collar occupations	128.5	129.6	130.6	131.1	132.7	133.7	134.9	136.6	138.0	1.0	4.0
Excluding sales occupations	130.0	130.9	132.2	132.6	134.0	135.1	136.3	138.1	139.5	1.0	4.1
Blue-collar occupations	125.2	126.0	126.4	127.3	128.2	129.2	130.0	130.9	132.1	.9	3.0
Service occupations	125.3	126.1	127.1	128.6	129.5	130.6	132.7	133.9	135.0	.8	4.2
Transportation and public utilities	127.9	128.4	129.3	130.4	131.3	131.7	132.9	134.2	135.8	1.2	3.4
Transportation	126.9	127.7	128.2	129.2	130.6	130.9	132.1	133.4	134.0	.4	2.6
Public utilities	128.9	129.1	130.4	131.7	132.0	132.5	133.7	135.1	137.9	2.1	4.5
Communications	128.0	127.5	129.1	131.1	130.2	130.5	131.8	134.0	136.6	1.9	4.9
Electric, gas, and sanitary services	130.1	131.1	132.0	132.4	134.2	134.9	136.0	136.4	139.6	2.3	4.0
Wholesale and retail trade	125.5	126.4	127.5	128.6	130.1	131.2	132.4	132.9	134.7	1.4	3.5
Excluding sales occupations	125.9	126.4	128.0	129.0	130.4	131.9	133.0	134.0	135.5	1.1	3.9
Wholesale trade	127.5	129.3	129.9	130.9	132.9	133.8	134.6	135.1	137.7	1.9	3.6
Excluding sales occupations	127.4	128.7	130.0	130.9	132.6	133.7	134.5	135.4	137.0	1.2	3.3
Retail trade	124.5	124.8	126.2	127.4	128.5	129.7	131.1	131.7	133.1	1.1	3.6
Food stores	123.6	124.4	127.0	128.4	128.2	128.2	129.8	129.4	131.3	1.5	2.4
General merchandise stores	122.4	123.6	124.6	126.3	126.4	127.7	128.6	130.0	131.2	.9	3.8

See footnotes at end of table.

21. Continued—Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	1996				1997				1998	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1998	
Finance, insurance, and real estate	124.5	126.3	126.7	126.0	128.6	129.4	130.5	134.5	136.7	1.6	6.3
Excluding sales occupations	127.5	128.5	129.7	129.2	131.5	132.4	133.5	137.6	140.2	1.9	6.6
Banking, savings and loan, and other credit agencies	126.9	128.2	130.3	128.0	130.6	131.6	133.1	140.6	143.3	1.9	9.7
Insurance	127.6	128.2	129.3	129.6	131.9	132.1	133.1	134.8	137.4	1.9	4.2
Services	130.7	131.7	132.7	133.4	134.6	135.7	137.0	138.5	139.3	.6	3.5
Business services	128.9	129.2	130.2	131.8	133.3	134.2	136.3	138.6	139.5	.6	4.7
Health services	132.6	133.5	134.2	134.5	135.5	135.9	137.0	138.1	138.2	.1	2.0
Hospitals	132.2	132.8	133.4	133.7	134.0	134.4	135.4	136.5	136.7	.1	2.0
Educational services	134.4	134.8	137.5	138.0	138.5	138.8	141.6	142.6	143.4	.6	3.5
Colleges and universities	135.9	136.2	138.6	139.1	139.5	139.9	142.5	143.7	144.3	.4	3.4
Nonmanufacturing	127.2	128.2	129.1	129.8	131.1	132.1	133.3	134.7	136.0	1.0	3.7
White-collar workers	128.5	129.5	130.5	131.1	132.7	133.6	134.9	136.5	137.9	1.0	3.9
Excluding sales occupations	130.0	130.8	132.1	132.5	134.0	135.1	136.2	137.9	139.3	1.0	4.0
Blue-collar occupations	124.6	125.6	125.9	126.7	127.5	128.6	129.4	130.1	131.0	.7	2.7
Service occupations	125.3	126.0	127.0	128.6	129.4	130.5	132.7	133.8	134.9	.8	4.3
State and local government workers	129.9	130.2	131.9	132.7	133.2	133.3	135.0	135.7	136.5	.6	2.5
Workers, by occupational group:											
White-collar workers	129.6	129.9	131.8	132.5	132.9	133.0	134.8	135.5	136.1	.4	2.4
Professional specialty and technical	129.1	129.5	131.6	132.3	132.5	132.5	134.6	135.1	135.6	.4	2.3
Executive, administrative, and managerial	130.7	131.0	132.0	132.9	134.1	134.4	135.6	136.4	137.5	.8	2.5
Administrative support, including clerical	130.0	130.4	131.8	133.0	133.3	133.5	135.3	136.1	136.9	.6	2.7
Blue-collar workers	129.0	129.5	130.3	131.2	132.1	132.3	133.3	134.2	135.0	.6	2.2
Workers, by industry division:											
Services	130.0	130.3	132.4	133.1	133.2	133.3	135.4	136.0	136.5	.4	2.5
Services excluding schools[5]	130.3	130.8	131.9	132.0	132.5	132.9	134.4	135.3	136.1	.6	2.7
Health services	132.5	133.1	134.0	134.1	134.5	134.9	136.0	137.2	137.9	.5	2.5
Hospitals	132.6	133.2	134.2	134.3	134.8	135.2	136.3	137.6	138.4	.6	2.7
Educational services	129.7	130.0	132.3	133.0	133.1	133.2	135.4	135.9	136.3	.3	2.4
Schools	130.0	130.3	132.6	133.4	133.4	133.5	135.7	136.2	136.6	.3	2.4
Elementary and secondary	130.2	130.5	132.6	133.1	133.1	133.3	135.5	135.8	136.1	.2	2.3
Colleges and universities	129.4	129.9	132.5	134.0	134.3	134.1	136.3	137.2	137.9	.5	2.7
Public administration[3]	129.2	129.6	130.7	131.8	133.0	133.0	134.1	135.1	136.4	1.0	2.6

[1] Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

[2] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[3] Consists of legislative, judicial, administrative, and regulatory activities.

[4] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[5] Includes, for example, library, social, and health services.

22. Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	1996				1997				1998	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1998	
Civilian workers[1]	125.1	126.1	127.2	128.0	129.2	130.1	131.6	132.8	134.0	0.9	3.7
Workers, by occupational group:											
White-collar workers	126.3	127.3	128.6	129.3	130.6	131.5	133.0	134.3	135.6	1.0	3.8
Professional specialty and technical	128.0	128.8	130.2	130.7	131.4	132.3	134.0	135.0	135.8	.6	3.3
Executive, adminitrative, and managerial	126.2	127.0	129.0	129.4	131.0	132.0	133.5	135.6	137.4	1.3	4.9
Administrative support, including clerical	126.4	127.1	128.4	129.1	130.4	131.4	132.7	133.7	135.0	1.0	3.5
Blue-collar workers	122.8	123.9	124.5	125.4	126.2	127.5	128.4	129.3	130.4	.9	3.3
Service occupations	124.2	124.9	126.2	127.6	128.6	129.3	131.5	132.6	133.7	.8	4.0
Workers, by industry division:											
Goods-producing	123.9	125.1	126.1	126.8	127.6	128.9	129.9	130.6	132.0	1.1	3.4
Manufacturing	125.4	126.5	127.7	128.4	129.1	130.3	131.3	132.2	133.7	1.1	3.6
Service-producing	125.6	126.5	127.7	128.5	129.8	130.6	132.2	133.6	134.8	.9	3.9
Services	128.0	128.9	130.3	131.1	132.0	132.9	134.8	136.0	136.9	.7	3.7
Health services	129.3	130.0	130.8	131.4	132.4	133.1	134.3	135.4	136.2	.6	2.9
Hospitals	128.6	129.2	130.0	130.5	131.0	131.5	132.5	133.6	134.2	.4	2.4
Educational services	128.8	129.1	131.6	132.3	132.5	132.6	135.3	135.9	136.3	.3	2.9
Public administration[2]	124.9	125.3	126.6	127.7	128.9	129.0	130.3	131.4	132.7	1.0	2.9
Nonmanufacturing	125.0	125.9	127.0	127.8	129.1	130.0	131.5	132.8	134.0	.9	3.8
Private industry workers	124.4	125.6	126.5	127.3	128.6	129.7	131.0	132.3	133.7	1.1	4.0
Excluding sales occupations	124.7	125.7	126.8	127.5	128.6	129.9	131.2	132.4	133.7	1.0	4.0
Workers, by occupational group:											
White-collar workers	125.8	127.0	128.0	128.7	130.2	131.3	132.7	134.2	135.7	1.1	4.2
Excluding sales occupations	126.7	127.6	129.0	129.4	130.8	132.0	133.4	134.8	136.3	1.1	4.2
Professional specialty and technical occupations	127.8	128.8	129.6	129.9	131.0	132.4	133.7	134.8	135.9	.8	3.7
Executive, adminitrative, and managerial occupations	125.9	126.8	128.9	129.3	131.0	132.1	133.6	135.8	137.8	1.5	5.2
Sales occupations	122.0	124.4	123.9	125.9	127.8	128.3	129.8	131.4	133.1	1.3	4.1
Administrative support occupations, including clerical	126.5	127.3	128.5	129.2	130.6	131.7	132.9	133.9	135.3	1.0	3.6
Blue-collar workers	122.5	123.7	124.3	125.1	126.0	127.3	128.3	129.1	130.2	.9	3.3
Precision production, craft, and repair occupations	122.4	123.7	124.2	125.1	125.8	127.4	128.2	128.7	129.8	.9	3.2
Machine operators, assemblers, and inspectors	123.4	124.5	125.4	126.4	127.2	128.5	129.5	130.6	131.6	.8	3.5
Transportation and material moving occupations	120.0	120.6	121.0	121.1	122.3	123.0	124.1	125.1	125.9	.6	2.9
Handlers, equipment cleaners, helpers, and laborers	124.2	125.1	125.8	127.1	128.4	129.3	130.2	131.8	133.2	1.1	3.7
Service occupations	122.2	123.0	124.1	125.7	126.6	127.6	129.9	131.1	132.1	.8	4.3
Production and nonsupervisory occupations[3]	123.7	124.9	125.6	126.5	127.7	128.8	130.1	131.2	132.3	.8	3.6
Workers, by industry division:											
Goods-producing	123.9	125.1	126.1	126.8	127.5	128.9	129.9	130.6	132.0	1.1	3.5
Excluding sales occupations	123.5	124.6	125.7	126.3	127.0	128.3	129.3	130.0	131.3	1.0	3.4
White-collar occupations	126.2	127.3	128.6	129.1	130.0	131.4	132.3	132.9	135.0	1.6	3.8
Excluding sales occupations	125.3	126.3	127.7	128.1	128.9	130.0	130.9	131.6	133.3	1.3	3.4
Blue-collar occupations	122.4	123.7	124.5	125.3	126.0	127.3	128.4	129.2	130.1	.7	3.3
Construction	118.3	119.6	120.4	120.8	122.0	123.6	124.7	124.9	126.0	.9	3.3
Manufacturing	125.4	126.5	127.7	128.4	129.1	130.3	131.3	132.2	133.7	1.1	3.6
White-collar occupations	127.1	128.2	129.6	130.1	130.6	131.9	132.8	133.6	135.6	1.5	3.8
Excluding sales occupations	126.0	127.0	128.4	128.9	129.3	130.5	131.3	132.2	133.8	1.2	3.5
Blue-collar occupations	124.2	125.4	126.3	127.3	128.0	129.2	130.2	131.2	132.3	.8	3.4
Durables	125.1	126.5	127.7	128.4	129.0	130.1	131.2	131.9	133.4	1.1	3.4
Nondurables	125.8	126.5	127.6	128.5	129.3	130.6	131.4	132.6	134.2	1.2	3.8
Service-producing	124.7	125.8	126.7	127.5	129.0	130.1	131.5	133.1	134.4	1.0	4.2
Excluding sales occupations	125.6	126.5	127.6	128.3	129.7	130.9	132.3	133.9	135.2	1.0	4.2
White-collar occupations	125.6	126.8	127.8	128.5	130.1	131.2	132.6	134.3	135.7	1.0	4.3
Excluding sales occupations	127.2	128.1	129.5	129.9	131.5	132.7	134.2	135.9	137.3	1.0	4.4
Blue-collar occupations	122.7	123.5	123.8	124.8	126.0	127.2	127.9	128.9	130.2	1.0	3.3
Service occupations	122.0	122.8	124.0	125.6	126.5	127.5	129.8	131.0	132.1	.8	4.4
Transportation and public utilities	124.6	125.0	125.9	127.0	128.2	128.8	130.1	131.3	132.1	.6	3.0
Transportation	122.9	123.2	123.8	124.7	126.5	126.9	128.5	129.5	130.1	.5	2.8
Public utilities	126.5	127.1	128.4	129.8	130.1	130.9	132.0	133.5	134.5	.7	3.4
Communications	126.1	126.5	128.2	130.3	129.8	130.6	131.8	134.0	134.4	.3	3.5
Electric, gas, and sanitary services	127.0	127.7	128.5	129.0	130.4	131.2	132.2	132.9	134.7	1.4	3.3
Wholesale and retail trade	123.9	124.8	125.8	127.0	128.5	129.7	130.9	131.6	133.3	1.3	3.7
Excluding sales occupations	124.4	124.9	126.5	127.7	129.3	131.1	132.2	133.2	134.7	1.1	4.2
Wholesale trade	126.1	128.0	128.5	129.6	131.4	132.2	133.0	133.6	136.2	1.9	3.7
Excluding sales occupations	126.3	127.6	128.9	129.8	131.8	132.8	133.9	135.0	136.5	1.1	3.6
Retail trade	122.8	123.1	124.4	125.8	127.1	128.5	129.9	130.6	131.9	1.0	3.8
Food stores	120.5	121.2	123.1	124.7	124.8	124.7	126.7	127.0	129.0	1.6	3.4
General merchandise stores	121.0	121.7	122.6	124.7	125.0	126.2	126.7	128.4	129.4	.8	3.5

See footnotes at end of table.

22. Continued—Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	1996				1997				1998	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1998	
Finance, insurance, and real estate	119.8	121.9	122.2	122.2	124.5	125.3	126.4	130.6	132.6	1.5	6.5
Excluding sales occupations	123.4	124.5	126.0	125.3	127.2	128.1	129.3	133.6	135.9	1.7	6.8
Banking, savings and loan, and other credit agencies	122.7	124.2	126.8	123.8	125.9	126.8	128.9	138.3	140.9	1.9	11.9
Insurance	123.6	124.1	125.4	126.0	127.9	128.0	128.7	130.2	133.1	2.2	4.1
Services	127.6	128.7	129.7	130.5	131.8	133.0	134.7	136.2	137.2	.7	4.1
Business services	126.9	127.7	128.5	130.1	131.4	132.4	134.9	137.3	137.6	.2	4.7
Health services	129.3	130.1	130.8	131.4	132.5	133.2	134.3	135.4	136.2	.6	2.8
Hospitals	128.5	129.1	129.7	130.3	130.7	131.2	132.2	133.2	133.6	.3	2.2
Educational services	130.1	130.4	133.3	133.8	134.5	134.8	137.8	138.4	139.1	.5	3.4
Colleges and universities	130.6	130.9	133.4	133.8	134.6	135.0	137.8	138.7	139.1	.3	3.3
Nonmanufacturing	123.9	125.1	125.9	126.8	128.2	129.3	130.7	132.1	133.4	1.0	4.1
White-collar workers	125.4	126.6	127.6	128.3	129.9	131.0	132.4	134.1	135..5	1.0	4.3
Excluding sales occupations	126.9	127.8	129.2	129.6	131.2	132.4	133.8	135.5	136.9	1.0	4.3
Blue-collar occupations	120.9	122.0	122.4	123.1	124.1	125.5	126.4	127.1	128.2	.9	3.3
Service occupations	122.0	122.7	123.9	125.5	126.4	127.4	129.7	130.9	132.0	.8	4.4
State and local government workers	127.8	128.1	130.1	130.9	131.4	131.5	133.6	134.4	135.1	.5	2.8
Workers, by occupational group:											
White-collar workers	127.9	128.2	130.3	131.1	131.4	131.5	133.7	134.5	135.0	.4	2.7
Professional specialty and technical	128.3	128.6	131.1	131.7	131.9	132.0	134.4	135.1	135.5	.3	2.7
Executive, administrative, and managerial	127.7	128.0	129.3	130.2	131.3	131.7	133.1	134.1	135.1	.7	2.9
Administrative support, including clerical	125.8	126.1	127.7	129.0	129.2	129.5	131.4	132.3	133.0	.5	2.9
Blue-collar workers	126.6	127.0	127.9	128.8	129.6	129.8	131.2	132.3	133.1	.6	2.7
Workers, by industry division:											
Services	128.6	128.9	131.2	131.9	132.1	132.2	134.7	135.3	135.7	.3	2.7
Services excluding schools[4]	128.2	128.7	130.1	130.5	131.2	131.6	133.3	134.4	135.4	.7	3.2
Health services	129.3	129.9	131.1	131.4	132.1	132.6	133.9	135.3	136.3	.7	3.2
Hospitals	129.1	129.7	130.9	131.3	131.9	132.4	133.7	135.2	136.3	.8	3.3
Educational services	128.5	128.8	131.3	132.0	132.1	132.2	134.8	135.3	135.7	.3	2.7
Schools	128.7	128.9	131.4	132.2	132.2	132.3	134.9	135.5	135.8	.2	2.7
Elementary and secondary	129.3	129.5	132.0	132.4	132.4	132.6	135.3	135.7	136.0	.2	2.7
Colleges and universities	126.8	127.1	129.8	131.2	131.5	131.4	133.6	134.6	135.2	.4	2.8
Public administration[2]	124.9	125.3	126.6	127.7	128.9	129.0	130.3	131.4	132.7	1.0	2.9

[1] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[2] Consists of legislative, judicial, administrative, and regulatory activities.

[3] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[4] Includes, for example, library, social, and health services.

23. Employment Cost Index, benefits, private industry workers by occupation and industry group

[June 1989 = 100]

Series	1996				1997				1998	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1998	
Private industry workers	136.6	137.4	138.1	138.6	139.4	140.1	140.8	141.8	142.6	0.6	2.3
Workers, by occupational group:											
White-collar workers	137.7	138.4	139.5	139.7	140.8	141.5	142.0	143.4	144.7	.9	2.8
Blue-collar workers	135.2	136.1	136.2	137.0	137.2	138.0	138.8	139.0	139.1	.1	1.4
Workers, by industry division:											
Goods-producing	137.7	138.6	138.8	139.7	139.9	140.9	141.5	141.5	141.5	.0	1.1
Service-producing	135.5	136.2	137.2	137.4	138.5	139.2	139.8	141.4	142.7	.9	3.0
Manufacturing	137.5	138.5	138.8	139.8	139.9	141.0	141.4	141.7	141.7	.0	1.3
Nonmanufacturing	136.0	136.7	137.5	137.9	138.9	139.5	140.2	141.5	142.7	.8	2.7

24. Employment Cost Index, private nonfarm workers by bargaining status, region, and area size

[June 1989 = 100]

Series	1996				1997				1998	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended Mar. 1998	12 months ended Mar. 1998
COMPENSATION											
Workers, by bargaining status[1]											
Union	128.5	129.7	130.1	130.8	131.0	131.8	133.2	133.5	134.0	0.4	2.3
Goods-producing	127.9	129.0	129.2	129.8	130.0	131.2	132.3	132.5	132.7	.2	2.1
Service-producing	129.0	130.3	131.0	131.7	131.9	132.4	134.0	134.5	135.3	.6	2.6
Manufacturing	128.8	129.8	129.8	130.6	130.8	131.7	133.0	133.3	133.6	.2	2.1
Nonmanufacturing	128.0	129.2	129.9	130.4	130.6	131.5	132.9	133.2	133.9	.5	2.5
Nonunion	127.7	128.7	129.7	130.4	131.8	132.8	133.9	135.3	136.7	1.0	3.7
Goods-producing	128.3	129.4	130.4	131.3	132.0	133.2	134.0	134.7	135.9	.9	3.0
Service-producing	127.3	128.3	129.2	129.9	131.5	132.5	133.7	135.3	136.7	1.0	4.0
Manufacturing	129.3	130.5	131.7	132.5	133.1	134.4	135.1	135.9	137.2	1.0	3.1
Nonmanufacturing	127.0	128.0	128.9	129.6	131.1	132.2	133.4	134.9	136.3	1.0	4.0
Workers, by region[1]											
Northeast	128.9	129.7	130.6	131.1	132.2	133.1	134.0	135.0	136.0	.7	2.9
South	127.0	127.8	128.8	129.7	130.8	131.5	132.5	134.6	135.5	.7	3.6
Midwest (formerly North Central)	129.5	130.7	131.3	132.1	133.3	134.7	136.2	136.9	138.3	1.0	3.8
West	125.9	127.3	128.3	128.9	130.3	131.4	132.5	133.4	135.2	1.3	3.8
Workers, by area size[1]											
Metropolitan areas	128.0	129.1	130.0	130.6	131.7	132.8	133.9	135.1	136.4	1.0	3.6
Other areas	127.2	128.0	128.7	130.2	131.4	132.4	133.8	135.3	135.9	.4	3.4
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	122.8	124.2	124.8	125.4	126.0	126.9	128.3	128.9	129.6	.5	2.9
Goods-producing	121.3	122.5	123.2	123.6	124.1	125.4	126.6	127.1	127.9	.6	3.1
Service-producing	124.8	126.2	126.8	127.6	128.2	128.8	130.4	131.2	131.8	.5	2.8
Manufacturing	122.9	123.9	124.5	125.2	125.6	126.5	127.8	128.6	129.6	.8	3.2
Nonmanufacturing	122.8	124.3	124.9	125.5	126.1	127.1	128.6	129.1	129.6	.4	2.8
Nonunion	124.8	125.9	126.9	127.7	129.1	130.3	131.6	133.0	134.5	1.1	4.2
Goods-producing	124.9	126.1	127.3	128.0	128.9	130.2	131.2	132.0	133.6	1.2	3.6
Service-producing	124.6	125.7	126.6	127.5	129.1	130.2	131.6	133.2	134.6	1.1	4.3
Manufacturing	126.3	127.5	128.8	129.6	130.3	131.7	132.6	133.5	135.1	1.2	3.7
Nonmanufacturing	124.2	125.2	126.1	127.0	128.5	129.7	131.1	132.6	134.0	1.1	4.3
Workers, by region[1]											
Northeast	124.9	126.0	127.0	127.7	128.8	129.8	130.7	131.6	132.6	.8	3.0
South	124:1	125.1	126.0	127.0	128.5	129.4	130.6	133.0	134.0	.8	4.3
Midwest (formerly North Central)	125.1	126.2	126.9	127.7	129.0	130.4	132.2	133.0	134.7	1.3	4.4
West	123.3	124.8	125.8	126.5	127.7	128.9	130.2	131.2	132.9	1.3	4.1
Workers, by area size[1]											
Metropolitan areas	124.6	125.8	126.7	127.4	128.7	129.9	131.1	132.3	133.8	1.1	4.0
Other areas	123.4	124.2	125.0	126.5	127.7	128.8	130.4	132.0	132.5	.4	3.8

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the *Monthly Labor Review* Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

25. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, medium and large private establishments, selected years, 1980–93

Item	1980	1982	1984	1986	1988	1989	1991	1993
Scope of survey (in 000's)	21,352	21,043	21,013	21,303	31,059	32,428	31,163	28,728
Number of employees (in 000's):								
With medical care	20,711	20,412	20,383	20,238	27,953	29,834	25,865	23,519
With life insurance	20,498	20,201	20,172	20,451	28,574	30,482	29,293	26,175
With defined benefit plan	17,936	17,676	17,231	16,190	19,567	20,430	18,386	16,015
Time-off plans								
Participants with:								
Paid lunch time	10	9	9	10	11	10	8	9
Average minutes per day	–	25	26	27	29	26	30	29
Paid rest time	75	76	73	72	72	71	67	68
Average minutes per day	–	25	26	26	26	26	28	26
Paid funeral leave	–	–	–	88	85	84	80	83
Average days per occurrence	–	–	–	3.2	3.2	3.3	3.3	3.0
Paid holidays	99	99	99	99	96	97	92	91
Average days per year	10.1	10.0	9.8	10.0	9.4	9.2	10.2	9.4
Paid personal leave	20	24	23	25	24	22	21	21
Average days per year	–	3.8	3.6	3.7	3.3	3.1	3.3	3.1
Paid vacations	100	99	99	100	98	97	96	97
Paid sick leave	62	67	67	70	69	68	67	65
Unpaid maternity leave	–	–	–	–	33	37	37	60
Unpaid paternity leave	–	–	–	–	16	18	26	53
Insurance plans								
Participants in medical care plans	97	97	97	95	90	92	83	82
Percent of participants with coverage for:								
Home health care	–	–	46	66	76	75	81	86
Extended care facilities	58	62	62	70	79	80	80	82
Physical exam	–	–	8	18	28	28	30	42
Percent of participants with employee contribution required for:								
Self coverage	26	27	36	43	44	47	51	61
Average monthly contribution	–	–	$11.93	$12.80	$19.29	$25.31	$26.60	$31.55
Family coverage	46	51	58	63	64	66	69	76
Average monthly contribution	–	–	$35.93	$41.40	$60.07	$72.10	$96.97	$107.42
Participants in life insurance plans	96	96	96	96	92	94	94	91
Percent of participants with:								
Accidental death and dismemberment insurance	69	72	74	72	78	71	71	76
Survivor income benefits	–	–	–	10	8	7	6	5
Retiree protection available	–	64	64	59	49	42	44	41
Participants in long-term disability insurance plans	40	43	47	48	42	45	40	41
Participants in sickness and accident insurance plans	54	51	51	49	46	43	45	44
Retirement plans								
Participants in defined benefit pension plans	84	84	82	76	63	63	59	56
Percent of participants with:								
Normal retirement prior to age 65	55	58	63	64	59	62	55	52
Early retirement available	98	97	97	98	98	97	98	95
Ad hoc pension increase in last 5 years	–	–	47	35	26	22	7	6
Terminal earnings formula	53	52	54	57	55	64	56	61
Benefit coordinated with Social Security	45	45	56	62	62	63	54	48
Participants in defined contribution plans	–	–	–	60	45	48	48	49
Participants in plans with tax-deferred savings arrangements	–	–	–	33	36	41	44	43
Other benefits								
Employees eligible for:								
Flexible benefits plans	–	–	–	2	5	9	10	12
Reimbursement accounts	–	–	–	5	12	23	36	52

NOTE: Dash indicates data not available.

26. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, small private establishments and State and local governments, 1987, 1990, 1992, and 1994

Item	Small private establishments			State and local governments			
	1990	1992	1994	1987	1990	1992	1994
Scope of survey (in 000's)	32,466	34,360	35,910	10,321	12,972	12,466	12,907
Number of employees (in 000's):							
With medical care	22,402	24,396	23,536	9,599	12,064	11,219	11,192
With life insurance	20,778	21,990	21,955	8,773	11,415	11,095	11,194
With defined benefit plan	6,493	7,559	5,480	9,599	11,675	10,845	11,708
Time-off plans							
Participants with:							
Paid lunch time	8	9	–	17	11	10	–
Average minutes per day	37	37	–	34	36	34	–
Paid rest time	48	49	–	58	56	53	–
Average minutes per day	27	26	–	29	29	29	–
Paid funeral leave	47	50	50	56	63	65	62
Average days per occurrence	2.9	3.0	3.1	3.7	3.7	3.7	3.7
Paid holidays	84	82	82	81	74	75	73
Average days per year[1]	9.5	9.2	7.5	10.9	13.6	14.2	11.5
Paid personal leave	11	12	13	38	39	38	38
Average days per year	2.8	2.6	2.6	2.7	2.9	2.9	3.0
Paid vacations	88	88	88	72	67	67	66
Paid sick leave	47	53	50	97	95	95	94
Unpaid leave	17	18	–	57	51	59	–
Unpaid paternity leave	8	7	–	30	33	44	–
Unpaid family leave	–	–	47	–	–	–	93
Insurance plans							
Participants in medical care plans	69	71	66	93	93	90	87
Percent of participants with coverage for:							
Home health care	79	80	–	76	82	87	84
Extended care facilities	83	84	–	78	79	84	81
Physical exam	26	28	–	36	36	47	55
Percent of participants with employee contribution required for:							
Self coverage	42	47	52	35	38	43	47
Average monthly contribution	$25.13	$36.51	$40.97	$15.74	$25.53	$28.97	$30.20
Family coverage	67	73	76	71	65	72	71
Average monthly contribution	$109.34	$150.54	$159.63	$71.89	$117.59	$139.23	$149.70
Participants in life insurance plans	64	64	61	85	88	89	87
Percent of participants with:							
Accidental death and dismemberment insurance	78	76	79	67	67	74	64
Survivor income benefits	1	1	2	1	1	1	2
Retiree protection available	19	25	20	55	45	46	46
Participants in long-term disability insurance plans	19	23	20	31	27	28	30
Participants in sickness and accident insurance plans	6	26	26	14	21	22	21
Retirement plans							
Participants in defined benefit pension plans	20	22	15	93	90	87	91
Percent of participants with:							
Normal retirement prior to age 65	54	50	–	92	89	92	92
Early retirement available	95	95	–	90	88	89	87
Ad hoc pension increase in last 5 years	7	4	–	33	16	10	13
Terminal earnings formula	58	54	–	100	100	100	99
Benefit coordinated with Social Security	49	46	–	18	8	10	49
Participants in defined contribution plans	31	33	34	9	9	9	9
Participants in plans with tax-deferred savings arrangements	17	24	23	28	45	45	24
Other benefits							
Employees eligible for:							
Flexible benefits plans	1	2	3	5	5	5	5
Reimbursement accounts	8	14	19	5	31	50	64

[1] Methods used to calculate the average number of paid holidays were revised in 1994 to count partial days more precisely. Average holidays for 1994 are not comparable with those reported in 1990 and 1992.

NOTE: Dash indicates data not available.

27. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1997											1998
	1996	1997	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.[P]
Number of stoppages:															
Beginning in period	37	29	1	0	1	6	6	0	3	2	6	3	1	0	1
In effect during period	38	38	6	4	4	7	12	3	5	3	6	5	3	2	1
Workers involved:															
Beginning in period (in thousands)	273	339	4.3	.0	2.7	55.8	16.9	.0	30.8	184.5	30.3	4.4	8.9	.0	8.0
In effect during period (in thousands)	275	351	16.3	9.9	10.1	60.6	60.5	12.0	41.5	189.3	30.3	8.6	11.1	2.2	8.0
Days idle:															
Number (in thousands)	4,889	4,497	238.7	170.6	144.3	537.7	567.4	231.2	247.1	2,075.4	128.4	64.0	48.5	43.8	16.0
Percent of estimated working time[1]	.02	.01	.01	.01	.01	.02	.02	.01	.01	.08	.00	.00	.00	.00	([2])

[1] Agricultural and government employees are included in the total employed and total working time; private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in "'Total economy' measures of strike idleness," *Monthly Labor Review*, October 1968, pp. 54–56.

[2] Less than 0.005.

[P] = preliminary.

28. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS															
All items	156.9	160.5	160.1	160.3	160.5	160.8	161.2	161.6	161.5	161.3	161.6	161.9	162.2	162.5	162.8
Food and beverages	153.7	157.7	157.1	157.1	157.5	158.1	158.4	158.7	158.9	159.1	160.3	159.8	160.1	160.2	160.7
Food	153.3	157.3	156.6	156.6	157.0	157.6	157.9	158.2	158.5	158.7	159.9	159.4	159.7	159.8	160.3
Food at home	154.3	158.1	157.5	157.3	157.7	158.5	158.6	159.0	159.1	159.2	161.0	160.0	160.2	160.2	160.7
Cereals and bakery products	174.0	177.6	176.9	178.2	178.3	178.6	178.1	178.4	178.0	178.4	179.0	179.7	179.6	180.2	180.5
Meats, poultry, fish, and eggs	144.8	148.5	147.7	147.9	148.2	149.1	149.1	148.9	149.3	148.4	148.3	147.5	147.2	146.3	146.2
Dairy and related products[1]	142.1	145.5	145.4	144.1	143.3	143.4	143.5	145.7	147.0	147.8	148.3	147.7	148.4	148.5	148.1
Fruits and vegetables	183.9	187.5	186.4	183.7	184.6	187.3	188.1	188.5	189.5	191.3	202.1	193.8	196.1	197.5	203.9
Nonalcoholic beverages and beverage materials	128.6	133.4	133.4	134.8	136.3	136.7	136.7	136.6	134.7	133.1	134.1	134.8	134.2	133.9	132.9
Other foods at home	142.9	147.3	147.1	147.8	148.6	148.7	148.9	149.0	147.7	147.7	148.7	149.1	149.5	149.6	149.3
Sugar and sweets	143.7	147.8	147.9	148.1	149.2	147.8	148.5	148.2	147.4	147.9	150.3	149.6	150.8	150.1	149.5
Fats and oils	140.5	141.7	142.0	141.6	141.4	141.4	142.0	141.7	140.4	140.3	140.5	141.5	142.2	140.7	141.2
Other foods	156.2	161.2	160.4	161.2	161.3	161.8	161.9	162.5	161.5	162.8	163.6	164.2	164.3	165.0	164.7
Other miscellaneous foods[1,2]	–	–	–	–	–	–	–	–	–	100.0	100.4	100.4	101.5	101.7	101.4
Food away from home[1]	152.7	157.0	156.3	156.6	157.1	157.4	157.8	158.2	158.6	159.0	159.2	159.6	159.9	160.2	160.6
Other food away from home[1,2]	–	–	–	–	–	–	–	–	–	100.0	100.1	100.4	100.3	100.6	100.6
Alcoholic beverages	158.5	162.8	162.8	162.7	162.9	163.2	163.5	163.7	163.7	164.0	164.6	165.0	165.1	165.2	165.2
Housing	152.8	156.8	155.9	156.9	157.5	157.6	157.7	157.7	157.7	157.7	158.3	158.8	159.2	159.5	159.7
Shelter	171.0	176.3	175.3	176.0	177.0	177.5	177.2	177.8	177.7	178.1	179.2	180.1	180.8	181.0	181.2
Rent of primary residence	162.0	166.7	165.9	166.4	166.8	167.3	167.8	168.2	168.7	169.1	169.5	169.9	170.3	170.7	171.1
Lodging away from home[2]	–	–	–	–	–	–	–	–	–	100.0	105.1	109.3	111.2	110.2	108.7
Owners' equivalent rent of primary residence[3]	176.8	181.9	180.9	181.4	182.1	182.6	183.2	183.6	184.2	184.7	185.1	185.5	185.9	186.4	186.8
Tenants' and household insurance[1,2]	–	–	–	–	–	–	–	–	–	100.0	100.3	100.2	100.3	100.4	99.6
Fuels and utilities	127.5	130.8	129.0	131.9	132.1	131.4	132.1	130.8	131.1	130.0	128.8	127.4	127.1	127.0	127.9
Fuels	115.2	117.9	115.3	119.8	119.6	118.6	119.7	117.4	117.7	115.8	114.5	112.8	112.5	112.3	113.2
Fuel oil and other fuels	99.2	99.8	100.4	98.0	94.7	93.5	93.7	95.3	96.6	97.2	96.4	95.2	94.4	92.8	91.8
Gas (piped) and electricity	122.1	125.1	121.9	127.5	127.8	126.7	128.1	125.1	125.3	123.0	121.6	119.7	119.4	119.4	120.5
Household furnishings and operations	124.7	125.4	125.8	125.7	125.6	125.2	125.4	125.4	125.2	125.1	125.6	126.1	126.3	127.0	126.6
Apparel	131.7	132.9	135.3	132.4	130.2	130.0	133.0	134.9	134.7	131.6	129.8	131.9	134.9	135.8	135.3
Men's and boys' apparel	127.7	130.1	132.0	129.0	128.0	128.9	131.4	133.1	133.0	131.2	129.8	130.8	133.6	133.4	133.5
Women's and girls' apparel	124.7	126.1	129.9	125.6	121.1	120.3	126.0	128.3	128.8	123.6	120.2	124.3	129.9	130.9	129.7
Infants' and toddlers' apparel[1]	129.7	129.0	133.8	132.9	131.3	127.3	126.7	126.2	126.0	125.8	124.8	123.1	124.4	126.6	126.9
Footwear	126.6	127.6	129.1	126.3	125.9	126.3	127.4	130.6	129.3	128.2	127.4	126.6	126.5	127.9	128.3
Transportation	143.0	144.3	144.4	144.0	143.7	143.8	144.3	144.5	143.9	143.2	142.7	142.1	141.4	141.5	142.0
Private transportation	140.0	141.0	141.0	140.7	140.1	140.8	141.0	140.9	140.6	140.0	139.3	138.4	137.5	137.7	138.4
New and used motor vehicles[2]	–	–	101.1	100.6	100.1	99.5	99.3	99.6	99.9	100.0	100.2	100.2	100.1	100.1	99.9
New vehicles	143.7	144.3	144.6	144.2	143.7	143.0	142.7	143.3	144.0	144.1	144.4	144.4	144.4	144.3	143.3
Used cars and trucks[1]	157.0	151.1	153.9	151.8	149.9	148.5	148.2	147.9	147.6	147.9	148.1	148.4	147.3	148.2	150.0
Motor fuel	106.3	106.2	105.7	105.9	103.9	107.6	109.3	106.7	104.6	101.9	97.8	94.1	90.9	91.7	94.7
Gasoline (all types)	105.9	105.8	105.2	105.4	103.5	107.4	109.2	106.5	104.1	101.3	97.2	93.5	90.3	91.1	94.2
Motor vehicle parts and equipment	102.2	101.9	101.7	101.7	102.3	101.8	101.7	101.4	101.6	101.4	101.3	101.4	101.2	100.5	100.6
Motor vehicle maintenance and repair	158.4	162.7	162.2	162.6	162.9	163.3	163.5	163.9	164.0	164.7	165.0	165.5	165.7	165.7	165.9
Public transportation	181.9	186.7	188.1	186.6	189.4	183.4	186.0	190.9	185.9	184.3	187.1	191.2	193.7	193.4	190.4
Medical care	228.2	234.6	234.2	234.4	234.8	235.2	235.4	235.8	236.4	237.1	238.1	239.3	239.8	240.7	241.4
Medical care commodities	210.4	215.3	215.6	216.0	216.0	215.5	215.3	215.6	215.8	216.8	217.6	218.4	218.5	220.2	221.5
Medical care services	232.4	239.1	238.5	238.7	239.2	239.8	240.0	240.5	241.2	241.8	242.9	244.2	244.8	245.4	245.9
Professional services	208.3	215.4	215.2	215.5	215.9	216.3	216.4	216.8	217.1	217.5	218.5	219.7	220.4	221.1	221.7
Hospital and related services	269.5	278.4	277.3	277.4	278.1	279.0	279.4	280.2	281.3	282.5	283.5	285.2	285.2	285.6	285.6
Recreation[2]	–	–	99.4	99.8	99.8	100.0	99.9	100.0	100.0	100.0	100.3	100.7	101.0	101.1	101.0
Video and audio[1,2]	–	–	98.9	99.6	99.9	100.0	99.9	99.9	100.3	100.0	100.6	101.2	101.4	101.4	101.2
Education and communication[2]	–	–	97.6	97.7	97.9	98.6	99.7	99.9	100.0	100.0	99.9	99.8	99.9	99.9	100.1
Education[2]	–	–	95.8	95.9	96.2	97.8	99.6	99.9	99.9	100.0	100.3	100.4	100.5	100.7	100.9
Educational books and supplies	226.9	238.4	235.9	237.2	237.7	240.0	241.5	242.4	242.4	242.8	245.1	246.9	247.5	248.8	248.9
Tuition, other school fees, and child care	267.1	280.4	276.1	277.0	281.9	287.5	288.2	288.3	288.5	289.2	289.2	289.2	289.5	290.0	290.5
Communication[1,2]	–	–	100.6	100.7	100.6	99.8	99.8	100.0	100.1	100.0	99.6	99.2	99.3	99.3	99.4
Information and information processing[1,2]	–	–	100.6	100.8	100.7	99.8	99.8	100.0	100.1	100.0	99.6	99.1	99.3	99.2	99.3
Telephone services[1,2]	–	–	–	–	–	–	–	–	–	100.0	99.9	100.0	100.4	100.5	101.1
Information and information processing other than telephone services[1,4]	57.2	50.1	50.8	49.9	49.1	48.2	48.5	48.9	47.6	47.4	46.2	44.3	43.4	42.8	41.5
Personal computers and peripheral equipment[1,2]	–	–	–	–	–	–	–	–	–	100.0	96.9	91.3	88.7	86.6	82.7
Other goods and services	215.4	224.8	223.1	223.1	223.5	225.7	228.1	229.4	229.9	230.1	231.3	233.1	232.4	234.7	236.7
Tobacco and smoking products	232.8	243.7	243.8	241.3	242.0	243.4	246.5	250.2	250.7	251.2	253.8	261.2	254.1	263.5	270.0
Personal care[1]	150.1	152.7	152.6	152.8	152.6	152.5	152.7	153.3	154.3	154.0	154.6	155.0	155.5	155.9	156.6
Personal care products[1]	144.3	144.2	144.1	144.2	143.7	143.5	143.7	144.5	146.1	145.3	146.1	146.7	147.3	147.3	149.3
Personal care services[1]	156.6	162.4	162.3	162.6	162.5	162.7	162.7	163.4	163.5	163.9	164.3	164.3	164.7	165.2	165.4
Miscellaneous personal services	215.6	226.1	225.0	226.5	226.9	228.6	228.4	228.9	229.5	230.0	230.9	232.1	232.8	233.5	234.0

28. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Commodity and service group:															
Commodities	139.9	141.8	142.1	141.5	141.0	141.4	142.1	142.4	142.3	141.7	141.6	141.5	141.5	142.0	142.3
Food and beverages	153.7	157.7	157.1	157.1	157.5	158.1	158.4	158.7	158.9	159.1	160.3	159.8	160.1	160.2	160.7
Commodities less food and beverages	131.5	132.2	132.9	132.0	131.0	131.3	132.2	132.5	132.2	131.2	130.5	130.5	130.4	131.0	131.3
Nondurables less food and beverages	133.0	134.6	135.4	134.2	132.9	133.8	135.5	135.8	135.3	133.5	132.0	132.1	132.1	133.0	134.0
Apparel	131.7	132.9	135.3	132.4	130.2	130.0	133.0	134.9	134.7	131.6	129.8	131.9	134.9	135.8	135.3
Nondurables less food, beverages, and apparel	138.6	140.6	140.4	140.1	139.3	140.8	141.9	141.3	140.6	139.5	138.1	137.2	135.6	136.6	138.4
Durables	129.4	128.7	129.4	129.0	128.3	127.7	127.6	127.8	127.9	128.0	128.2	128.2	128.0	128.1	127.6
Services	174.1	179.4	178.4	179.3	180.1	180.3	180.6	181.0	181.0	181.0	181.8	182.4	182.9	183.2	183.4
Rent of shelter[3]	178.0	183.4	182.4	183.1	184.1	184.7	184.4	185.0	185.0	185.3	186.5	187.5	188.1	188.4	188.6
Transportation services	180.5	185.0	184.9	184.5	185.6	184.3	184.7	186.9	186.2	186.0	187.1	187.9	188.4	188.3	187.8
Other services	201.4	209.6	208.0	208.8	209.1	210.7	212.2	212.7	212.7	213.1	213.7	214.4	215.1	215.6	216.1
Special indexes:															
All items less food	157.5	161.1	160.7	161.0	161.1	161.3	161.8	162.2	162.1	161.8	161.9	162.3	162.6	163.0	163.3
All items less shelter	152.8	155.9	155.7	155.7	155.6	155.9	156.6	156.9	156.8	156.4	156.4	156.4	156.5	156.9	157.3
All items less medical care	152.8	156.3	155.9	156.1	156.3	156.6	157.1	157.4	157.3	157.0	157.3	157.5	157.8	158.1	158.4
Commodities less food	132.6	133.4	134.1	133.3	132.3	132.6	133.5	133.8	133.5	132.6	131.9	131.9	131.8	132.4	132.7
Nondurables less food	134.5	136.3	137.0	135.9	134.7	135.5	137.2	137.4	137.0	135.3	133.9	134.1	134.1	135.0	135.9
Nondurables less food and apparel	139.5	141.8	141.7	141.4	140.8	142.1	143.0	142.5	141.9	141.0	139.8	138.9	137.5	138.4	140.1
Nondurables	143.5	146.4	146.4	145.8	145.4	146.1	147.1	147.4	147.3	146.5	146.2	146.1	146.2	146.7	147.5
Services less rent of shelter[3]	182.5	188.1	186.9	188.1	188.8	188.7	189.5	189.8	189.8	189.5	189.9	190.1	190.6	190.8	191.1
Services less medical care services	168.7	173.9	172.8	173.8	174.6	174.8	175.1	175.5	175.4	175.4	176.1	176.6	177.2	177.4	177.6
Energy	110.1	111.5	109.9	112.3	111.4	112.5	113.9	111.5	110.7	108.4	105.9	103.2	101.6	101.9	103.8
All items less energy	163.1	167.1	166.8	166.7	167.0	167.3	167.6	168.3	168.3	168.3	169.0	169.6	170.1	170.4	170.5
All items less food and energy	165.6	169.5	169.3	169.2	169.5	169.6	170.0	170.8	170.8	170.7	171.2	172.1	172.6	173.0	173.1
Commodities less food and energy	141.3	142.3	143.3	142.2	141.5	141.2	142.0	142.7	142.8	142.1	142.0	142.7	143.1	143.8	143.6
Energy commodities	105.7	105.7	105.3	105.2	103.1	106.2	107.7	105.7	103.9	101.6	97.8	94.3	91.3	91.8	94.6
Services less energy	179.4	185.0	184.1	184.6	185.4	185.8	186.0	186.7	186.7	186.9	187.9	188.8	189.4	189.7	189.8
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS															
All items	154.1	157.6	157.2	157.4	157.5	157.8	158.3	158.5	158.5	158.2	158.4	158.5	158.7	159.1	159.5
Food and beverages	153.2	157.2	156.6	156.6	157.0	157.6	157.8	158.1	158.3	158.5	159.6	159.2	159.4	159.5	159.9
Food	152.8	156.8	156.1	156.1	156.6	157.1	157.4	157.7	157.9	158.1	159.3	158.8	159.1	159.1	159.6
Food at home	153.5	157.2	156.6	156.5	156.9	157.6	157.7	158.0	158.1	158.2	159.9	158.9	159.2	159.1	159.6
Cereals and bakery products	173.6	177.3	176.7	177.9	177.9	178.2	177.7	178.0	177.8	178.1	178.8	179.4	179.3	179.9	180.3
Meats, poultry, fish, and eggs	144.5	148.2	147.4	147.5	148.0	148.8	148.7	148.5	149.0	148.0	148.0	147.2	146.9	146.0	145.8
Dairy and related products[1]	141.9	145.2	145.1	143.8	143.0	143.0	143.2	145.5	146.8	147.5	147.9	147.4	148.1	148.2	147.8
Fruits and vegetables	183.1	186.6	185.4	183.1	184.0	186.9	187.5	187.7	188.4	190.0	200.9	192.4	194.8	196.3	202.8
Nonalcoholic beverages and beverage materials	128.1	132.3	132.4	133.6	134.9	135.2	135.2	135.2	133.3	131.7	132.9	133.6	133.1	132.7	131.6
Other foods at home	142.6	146.8	146.6	147.2	147.9	148.0	148.2	148.4	147.0	147.1	148.1	148.5	148.9	148.9	148.7
Sugar and sweets	143.6	147.7	147.9	148.1	149.2	147.8	148.4	148.0	147.3	147.7	150.2	149.5	151.0	150.0	149.4
Fats and oils	140.3	141.4	141.7	141.3	141.1	141.2	141.7	141.4	140.2	140.0	140.4	141.4	141.9	140.4	141.1
Other foods	156.0	161.1	160.3	160.9	161.2	161.6	161.8	162.3	161.3	162.7	163.6	164.1	164.3	165.0	164.6
Other miscellaneous foods[1,2]	–	–	–	–	–	–	–	–	–	100.0	100.5	100.5	101.8	101.7	101.5
Food away from home[1]	152.6	157.0	156.2	156.6	157.1	157.4	157.8	158.2	158.6	159.0	159.3	159.6	159.9	160.2	160.6
Other food away from home[1,2]	–	–	–	–	–	–	–	–	–	100.0	100.1	100.3	100.3	100.6	100.6
Alcoholic beverages	157.9	162.1	162.2	162.1	162.2	162.5	162.6	162.8	162.8	163.1	163.6	163.9	164.0	164.2	164.1
Housing	149.6	153.4	152.6	153.6	154.1	154.2	154.4	154.4	154.5	154.4	154.8	155.1	155.5	155.8	156.1
Shelter	166.2	171.2	170.3	170.9	171.7	172.3	172.2	172.7	172.8	173.1	173.9	174.6	175.2	175.5	175.7
Rent of primary residence	161.6	166.3	165.6	166.0	166.5	167.0	167.5	167.9	168.4	168.8	169.2	169.6	170.0	170.3	170.8
Lodging away from home[2]	–	–	–	–	–	–	–	–	–	100.0	104.8	108.6	110.8	110.3	108.6
Owners' equivalent rent of primary residence[3]	161.2	165.8	164.9	165.4	166.0	166.5	167.0	167.4	167.9	168.3	168.7	169.1	169.5	169.9	170.2
Tenants' and household insurance[1,2]	–	–	–	–	–	–	–	–	–	100.0	100.4	100.2	100.5	100.5	99.7
Fuels and utilities	127.2	130.5	128.7	131.7	131.9	131.2	131.9	130.6	130.9	129.7	128.6	127.1	126.9	126.9	127.9
Fuels	114.7	117.3	114.7	119.2	119.1	118.1	119.3	116.8	117.3	115.2	113.9	112.2	111.9	111.8	112.9
Fuel oil and other fuels	99.0	99.6	100.0	97.6	94.5	93.2	93.4	95.0	96.4	97.0	96.2	95.1	94.5	93.1	92.0
Gas (piped) and electricity	121.6	124.6	121.5	127.0	127.3	126.2	127.6	124.6	124.9	122.4	121.0	119.2	118.9	118.9	120.2
Household furnishings and operations	123.2	123.9	124.3	124.2	124.1	123.7	123.9	123.9	123.7	123.6	124.1	124.7	125.0	125.6	125.2
Apparel	130.9	132.1	134.7	131.8	129.8	129.4	132.1	133.9	133.6	130.3	128.7	130.4	133.0	134.0	133.7
Men's and boys' apparel	127.4	129.9	131.7	128.8	128.0	128.8	131.2	132.4	132.7	130.7	129.4	130.1	132.8	132.9	133.1
Women's and girls' apparel	123.6	124.9	129.0	124.8	120.6	119.6	124.6	126.8	127.0	121.5	118.5	122.3	127.3	128.3	127.4
Infants' and toddlers' apparel[1]	130.8	130.1	134.9	133.8	132.0	128.4	128.3	127.7	127.1	126.5	125.3	123.1	124.5	126.9	127.4
Footwear	127.6	128.5	130.1	127.2	126.8	127.3	128.3	131.8	130.4	129.2	128.4	127.4	127.1	128.4	129.0
Transportation	142.8	143.6	143.8	143.4	142.9	143.3	143.6	143.6	143.1	142.4	141.7	140.9	140.1	140.3	141.1
Private transportation	140.7	141.3	141.5	141.1	140.4	141.1	141.4	141.1	140.8	140.1	139.3	138.4	137.4	137.7	138.6
New and used motor vehicles[2]	–	–	101.5	100.9	100.2	99.6	99.4	99.7	99.9	100.0	100.1	100.2	100.0	100.1	100.1
New vehicles	144.7	145.5	145.9	145.4	144.9	144.3	144.0	144.7	145.1	145.3	145.6	145.5	145.6	145.5	144.5
Used cars and trucks[1]	158.2	152.6	155.3	153.3	151.4	149.9	149.7	149.4	149.2	149.5	149.7	149.9	148.8	149.5	151.3

28. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Motor fuel	106.3	106.2	105.7	105.9	104.0	107.7	109.2	106.6	104.4	101.7	97.6	94.1	91.0	91.9	95.0
Gasoline (all types)	105.9	105.8	105.2	105.5	103.6	107.6	109.2	106.3	104.0	101.2	97.1	93.6	90.5	91.3	94.8
Motor vehicle parts and equipment	101.3	101.0	100.7	100.8	101.5	101.0	100.8	100.6	100.7	100.8	100.7	100.9	100.7	99.9	99.5
Motor vehicle maintenance and repair	159.3	163.7	163.2	163.7	164.0	164.2	164.5	164.9	165.1	165.7	166.0	166.5	166.7	166.8	167.0
Public transportation	179.6	184.2	185.2	184.0	186.2	181.6	183.5	187.8	183.9	182.5	184.7	187.9	190.2	190.1	187.4
Medical care	227.6	234.0	233.6	233.8	234.2	234.6	234.7	235.2	235.8	236.5	237.4	238.7	239.1	239.9	240.0
Medical care commodities	207.8	212.6	212.9	213.4	213.3	212.5	212.5	212.9	213.1	214.1	214.7	215.4	215.5	217.0	218.2
Medical care services	232.1	238.8	238.2	238.4	238.9	239.5	239.7	240.3	240.8	241.6	242.5	244.0	244.5	245.1	245.0
Professional services	209.5	216.7	216.5	216.8	217.2	217.7	217.8	218.1	218.5	218.9	219.8	221.0	221.8	222.5	223.3
Hospital and related services	266.5	274.7	273.6	273.6	274.4	275.2	275.6	276.4	277.4	278.7	279.6	281.4	281.4	281.7	281.1
Recreation[2]	–	–	99.4	99.8	99.8	100.1	100.0	100.1	100.0	100.0	100.3	100.7	101.0	101.0	100.9
Video and audio[1,2]	–	–	98.9	99.5	100.0	100.0	99.9	99.9	100.3	100.0	100.5	101.2	101.4	101.4	101.3
Education and communication[2]	–	–	97.8	97.9	98.1	98.5	99.7	99.9	100.0	100.0	100.0	99.8	100.0	100.1	100.3
Education[2]	–	–	95.7	95.9	96.2	97.6	99.6	99.8	99.9	100.0	100.3	100.4	100.5	100.7	100.9
Educational books and supplies	228.2	240.4	237.5	239.6	240.1	241.9	243.9	244.7	244.7	245.2	247.5	249.4	250.0	251.2	251.3
Tuition, other school fees, and child care	261.0	274.6	270.3	270.6	271.4	275.7	281.5	282.1	282.3	282.7	283.5	283.5	283.9	284.4	284.9
Communication[1,2]	–	–	100.5	100.7	100.6	99.7	99.8	99.9	100.1	100.0	99.7	99.3	99.5	99.5	99.7
Information and information processing[1,2]	–	–	100.5	100.7	100.7	99.7	99.8	99.9	100.1	100.0	99.6	99.3	99.5	99.5	99.7
Telephone services[1,2]	–	–	–	–	–	–	–	–	–	100.0	99.9	100.0	100.4	100.5	101.2
Information and information processing other than telephone services[1,4]	57.7	51.1	51.8	50.9	50.1	49.3	49.5	50.1	49.3	48.9	47.7	45.8	44.8	44.1	42.6
Personal computers and peripheral equipment[1,2]	–	–	–	–	–	–	–	–	–	100.0	96.6	91.1	88.3	86.0	81.9
Other goods and services	212.2	221.6	220.2	219.9	220.3	222.1	224.6	226.1	226.7	226.9	228.2	230.6	229.3	232.3	234.4
Tobacco and smoking products	232.5	243.3	243.4	240.9	241.7	243.0	246.1	249.9	250.5	250.9	253.6	261.1	253.7	263.6	270.1
Personal care[1]	150.1	152.6	152.6	152.7	152.4	152.4	152.6	153.3	154.3	153.9	154.5	155.0	155.5	155.9	156.1
Personal care products[1]	145.0	145.1	145.0	145.0	144.6	144.4	144.7	145.4	147.1	146.1	147.0	147.6	148.2	148.4	150.1
Personal care services[1]	156.6	162.5	162.4	162.7	162.6	162.8	163.0	163.5	163.7	164.1	164.5	164.5	164.9	165.5	165.7
Miscellaneous personal services	214.7	225.2	224.6	225.4	225.6	227.2	227.3	227.7	228.3	228.9	229.8	231.1	231.7	232.5	233.0
Commodity and service group:															
Commodities	139.9	141.8	142.1	141.5	141.0	141.4	142.1	142.3	142.1	141.6	141.4	141.3	141.1	141.6	142.2
Food and beverages	153.2	157.2	156.6	156.6	157.0	157.6	157.8	158.1	158.3	158.5	159.6	159.2	159.4	159.5	159.9
Commodities less food and beverages	131.8	132.4	133.2	132.3	131.3	131.6	132.5	132.7	132.3	131.3	130.5	130.5	130.1	130.9	131.3
Nondurables less food and beverages	132.8	134.5	135.3	134.1	132.9	133.9	135.5	135.7	135.1	133.1	131.5	131.5	131.2	132.3	133.6
Apparel	130.9	132.1	134.7	131.8	129.8	129.4	132.1	133.9	133.6	130.3	128.7	130.4	133.0	134.0	133.1
Nondurables less food, beverages, and apparel	138.3	140.4	140.2	139.9	139.1	140.8	141.9	141.2	140.5	139.3	137.6	136.7	134.8	136.0	138.2
Durables	129.2	128.4	129.2	128.6	128.0	127.4	127.2	127.3	127.3	127.5	127.7	127.7	127.5	127.6	127.7
Services	174.1	176.5	175.5	176.4	177.1	177.4	177.7	178.0	178.1	178.2	178.7	179.1	179.6	179.9	180.4
Rent of shelter[3]	159.9	164.7	163.9	164.5	165.3	165.8	165.8	166.2	166.3	166.6	167.4	168.1	168.6	169.0	169.2
Transporatation services	178.3	182.6	182.4	182.0	182.9	182.1	182.3	184.2	184.0	183.9	184.9	185.3	185.8	185.7	185.4
Other services	198.1	206.4	205.0	205.7	205.9	207.4	209.0	209.4	209.5	209.9	210.5	211.2	211.9	212.4	213.0
Special indexes:															
All items less food	154.3	157.6	157.3	157.5	157.5	157.8	158.4	158.6	158.5	158.1	158.1	158.4	158.5	159.0	159.4
All items less shelter	151.0	154.0	153.8	153.8	153.6	153.9	154.6	154.8	154.7	154.2	154.2	154.1	154.2	154.6	155.1
All items less medical care	150.7	154.0	153.6	153.8	153.8	154.2	154.7	154.9	154.9	154.5	154.7	154.8	154.9	155.3	155.7
Commodities less food	132.8	133.6	134.4	133.5	132.5	132.9	133.7	133.9	133.5	132.5	131.8	131.8	131.5	132.2	132.7
Nondurables less food	134.3	136.2	136.9	135.8	134.7	135.6	137.1	137.3	136.7	135.0	133.5	133.5	133.2	134.2	135.1
Nondurables less food and apparel	139.3	141.6	141.4	141.1	140.4	141.9	142.9	142.4	141.7	140.7	139.2	138.3	136.6	137.8	139.1
Nondurables	143.3	146.2	146.2	145.7	145.3	146.0	147.0	147.2	147.0	146.2	145.9	145.6	145.6	146.2	147.1
Services less rent of shelter[3]	162.7	167.6	166.5	167.7	168.2	168.2	168.8	169.0	169.1	168.8	169.1	169.2	169.6	169.8	170.0
Services less medical care services	166.2	171.2	170.1	171.1	171.8	172.0	172.4	172.7	172.8	172.7	173.2	173.6	174.1	174.4	174.7
Energy	109.8	111.1	109.5	111.8	110.8	112.2	113.5	111.0	110.1	107.7	105.0	102.4	100.8	101.1	103.2
All items less energy	160.4	164.1	163.9	163.8	164.0	164.2	164.6	165.2	165.3	165.2	165.8	166.3	166.7	167.1	167.3
All items less food and energy	162.3	166.0	165.9	165.8	165.9	166.0	166.5	167.1	167.2	167.1	167.5	168.2	168.6	169.1	169.3
Commodities less food and energy	140.9	141.9	142.9	141.8	141.1	140.8	141.5	142.2	142.2	141.5	141.5	142.1	142.3	143.1	143.1
Energy commodities	105.9	105.9	105.5	105.5	103.4	106.7	108.1	105.8	104.0	101.6	97.7	94.3	91.4	92.1	95.0
Services less energy	176.8	182.2	181.4	181.9	182.6	183.0	183.3	183.9	184.0	184.3	185.1	185.8	186.4	186.7	186.9

[1] Not seasonally adjusted.

[2] Indexes on a December 1997 = 100 base.

[3] Indexes on a December 1982 = 100 base.

[4] Indexes on a December 1988 = 100 base.

– Data not available.

NOTE: Index applies to a month as a whole, not to any specific date.

29. Consumer Price Index: U.S. city average and available local area data: all items

[1982–84 = 100, unless otherwise indicated]

Area	Pricing schedule[1]	All Urban Consumers							Urban Wage Earners						
		1997		1998					1997		1998				
		Apr.	May	Jan.	Feb.	Mar.	Apr.	May	Apr.	May	Jan.	Feb.	Mar.	Apr.	May
U.S. city average	M	160.2	160.1	161.6	161.9	162.2	162.5	162.8	157.2	157.2	158.4	158.5	158.7	159.1	159.5
Region and area size[2]															
Northeast urban	M	167.1	166.8	168.8	169.1	169.3	169.5	169.4	164.4	164.1	165.7	165.9	166.0	166.3	166.4
Size A—More than 1,500,000	M	167.7	167.5	169.5	170.1	170.2	170.2	170.2	163.9	163.8	165.4	165.8	165.8	166.0	166.1
Size B/C—50,000 to 1,500,000[3]	M	100.7	100.3	101.6	101.4	101.7	102.1	101.8	100.6	100.3	101.3	101.1	101.3	101.5	101.5
Midwest urban[4]	M	156.1	156.3	157.6	158.0	158.4	159.0	159.4	152.6	152.8	153.9	154.2	154.4	155.0	155.6
Size A—More than 1,500,000	M	156.9	157.0	158.5	158.9	159.5	160.1	160.5	152.6	152.7	153.9	154.2	154.7	155.4	155.9
Size B/C—50,000 to 1,500,000[3]	M	100.3	100.5	101.2	101.6	101.6	101.9	102.3	100.1	100.4	101.1	101.4	101.3	101.7	102.1
Size D—Nonmetropolitan (less than 50,000)	M	152.1	152.2	152.9	152.7	152.9	153.2	153.4	150.0	150.2	150.9	150.8	150.7	150.9	151.3
South urban	M	156.7	156.6	157.6	157.8	158.2	158.5	158.8	155.1	155.1	155.8	155.7	156.0	156.4	156.7
Size A—More than 1,500,000	M	155.7	155.5	156.6	156.7	157.2	157.6	157.7	153.6	153.6	154.4	154.3	154.7	155.1	155.3
Size B/C—50,000 to 1,500,000[3]	M	101.1	101.0	101.5	101.6	101.8	102.0	102.2	100.9	100.9	101.2	101.1	101.3	101.5	101.8
Size D—Nonmetropolitan (less than 50,000)	M	156.1	156.0	157.5	157.9	158.4	159.1	159.3	156.3	156.3	157.6	158.0	158.2	159.1	159.6
West urban	M	161.1	161.1	163.0	163.2	163.3	163.6	164.3	157.8	157.8	159.4	159.4	159.4	159.6	160.3
Size A—More than 1,500,000	M	161.2	161.1	163.3	163.6	163.8	164.2	165.0	156.2	156.1	158.0	158.0	158.1	158.5	159.4
Size B/C—50,000 to 1,500,000[3]	M	101.4	101.5	102.3	102.3	102.3	102.2	102.4	101.4	101.5	102.2	102.2	102.1	102.0	102.2
Size classes:															
A[5]	M	144.5	144.5	146.0	146.4	146.6	147.0	147.3	143.4	143.3	144.6	144.8	145.0	145.4	145.8
B/C[3]	M	100.9	100.9	101.6	101.7	101.8	102.0	102.2	100.7	100.7	101.3	101.3	101.4	101.6	101.9
D	M	156.5	156.4	157.7	157.8	158.1	158.5	158.8	155.6	155.6	156.7	156.8	156.8	157.3	157.8
Selected local areas[6]															
Chicago–Gary–Kenosha, IL–IN–WI	M	160.9	161.1	162.8	163.1	164.1	164.8	165.6	155.3	155.5	157.3	157.4	158.3	159.0	159.9
Los Angeles–Riverside–Orange County, CA	M	159.9	159.5	161.0	161.1	161.4	161.8	162.3	154.3	154.0	155.1	155.0	155.1	155.6	156.2
New York, NY–Northern NJ–Long Island, NY–NJ–CT–PA.	M	170.2	169.9	172.1	172.7	173.0	173.0	173.0	166.1	166.0	167.7	168.2	168.2	168.5	168.6
Boston–Brockton–Nashua, MA–NH–ME–CT	1	–	166.7	171.2	–	171.3	–	170.9	–	165.6	169.3	–	169.3	–	168.9
Cleveland–Akron, OH	1	–	155.6	158.2	–	158.6	–	159.2	–	147.8	150.0	–	150.1	–	151.2
Dallas–Ft Worth, TX	1	150.6	–	152.1	–	153.0	–	153.0	150.4	–	152.2	–	152.8	–	152.8
Washington–Baltimore, DC–MD–VA–WV[7]	1	–	100.5	101.0	–	101.6	–	101.5	–	100.5	100.8	–	101.3	–	101.3
Atlanta, GA	2	–	–	–	159.5	–	160.8	–	–	–	–	156.6	–	157.7	–
Detroit–Ann Arbor–Flint, MI	2	156.0	–	–	158.5	–	159.1	–	151.0	–	–	152.9	–	153.5	–
Houston–Galveston–Brazoria, TX	2	145.2	–	–	146.1	–	146.3	–	144.1	–	–	144.7	–	144.8	–
Miami–Ft. Lauderdale, FL	2	–	157.9	–	160.2	–	160.2	–	–	155.6	–	157.3	–	157.4	–
Philadelphia–Wilmington–Atlantic City, PA–NJ–DE–MD	2	166.0	166.0	–	167.0	–	167.1	–	165.1	165.2	–	166.1	–	166.5	–
San Francisco–Oakland–San Jose, CA	2	159.6	159.8	–	163.2	–	164.6	–	156.7	156.8	–	159.6	–	160.8	–
Seattle–Tacoma–Bremerton, WA	2	–	–	–	166.5	–	166.4	–	–	–	–	162.2	–	161.9	–

[1] Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:
M—Every month.
1—January, March, May, July, September, and November.
2—February, April, June, August, October, and December.

[2] Regions defined as the four Census regions.

[3] Indexes on a December 1996 = 100 base.

[4] The "North Central" region has been renamed the "Midwest" region by the Census Bureau. It is composed of the same geographic entities.

[5] Indexes on a December 1986 = 100 base.

[6] In addition, the following metropolitan areas are published semiannually and appear in tables 34 and 39 of the January and July issues of the *CPI Detailed Report*: Anchorage, AK; Cincinnati–Hamilton, OH–KY–IN; Denver–Boulder–Greeley, CO; Honolulu, HI; Kansas City, MO–KS; Milwaukee–Racine, WI; Minneapolis–St. Paul, MN–WI; Pittsburgh, PA; Portland–Salem, OR–WA; St Louis, MO–IL; San Diego, CA; Tampa–St. Petersburg–Clearwater, FL.

[7] Indexes on a November 1996 = 100 base.

– Data not available.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Each local index has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses.

Index applies to a month as a whole, not to any specific date.

30. Annual data: Consumer Price Index, U.S. city average, all items and major groups

[1982–84 = 100]

Series	1989	1990	1991	1992	1993	1994	1995	1996	1997
Consumer Price Index for All Urban Consumers:									
All items:									
Index	124.0	130.7	136.2	140.3	144.5	148.2	152.4	156.9	160.5
Percent change	4.8	5.4	4.2	3.0	3.0	2.6	2.8	3.0	2.3
Food and beverages:									
Index	124.9	132.1	136.8	138.7	141.6	144.9	148.9	153.7	157.7
Percent change	5.7	5.8	3.6	1.4	2.1	2.3	2.8	3.2	2.6
Housing:									
Index	123.0	128.5	133.6	137.5	141.2	144.8	148.5	152.8	156.8
Percent change	3.8	4.5	4.0	2.9	2.7	2.5	2.6	2.9	2.6
Apparel:									
Index	118.6	124.1	128.7	131.9	133.7	133.4	132.0	131.7	132.9
Percent change	2.8	4.6	3.7	2.5	1.4	–.2	–1.0	–0.2	.9
Transportation:									
Index	114.1	120.5	123.8	126.5	130.4	134.3	139.1	143.0	144.3
Percent change	5.0	5.6	2.7	2.2	3.1	3.0	3.6	2.8	0.9
Medical care:									
Index	149.3	162.8	177.0	190.1	201.4	211.0	220.5	228.2	234.6
Percent change	7.7	9.0	8.7	7.4	5.9	4.8	4.5	3.5	2.8
Other goods and services:									
Index	147.7	159.0	171.6	183.3	192.9	198.5	206.9	215.4	224.8
Percent change	7.8	7.7	7.9	6.8	5.2	2.9	4.2	4.1	4.4
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	122.6	129.0	134.3	138.2	142.1	145.6	149.8	154.1	157.6
Percent change	4.8	5.2	4.1	2.9	2.8	2.5	2.9	2.9	2.3

31. Producer Price Indexes, by stage of processing

[1982 = 100]

Grouping	Annual average		1997								1998				
	1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Finished goods	131.3	131.8	131.6	131.6	131.3	131.7	131.8	132.3	131.7	131.1	130.3	130.1	129.7	130.0	130.4
Finished consumer goods	129.5	130.2	130.0	130.0	129.7	130.3	130.5	130.7	130.1	129.4	128.3	128.1	127.6	127.9	128.6
Finished consumer foods	133.6	134.5	135.2	134.0	134.0	134.9	134.7	135.1	134.6	134.4	133.1	133.6	133.3	133.6	133.5
Finished consumer goods excluding foods	127.6	128.2	127.6	128.1	127.6	128.1	128.6	128.7	128.0	127.2	126.1	125.5	124.9	125.3	126.4
Nondurable goods less food	123.3	124.3	123.5	124.4	124.1	124.8	125.8	124.6	123.9	123.0	121.5	120.6	119.9	120.5	122.4
Durable goods	134.2	133.7	133.6	133.4	132.4	132.3	131.4	134.7	134.1	133.4	133.4	133.5	133.3	133.2	132.0
Capital equipment	138.3	138.2	138.1	138.1	137.8	137.7	137.2	138.5	138.3	137.9	137.9	137.9	137.9	137.8	137.3
Intermediate materials, supplies, and components	125.7	125.6	125.4	125.8	125.5	125.8	126.0	125.5	125.5	125.0	124.2	124.0	123.3	123.3	123.4
Materials and components for manufacturing	128.6	128.3	128.4	128.3	128.2	128.3	128.3	128.0	128.2	128.0	127.5	127.5	127.0	127.0	126.8
Materials for food manufacturing	125.3	123.2	123.9	122.7	122.3	122.9	123.1	122.4	124.2	123.2	119.9	122.1	121.1	121.8	123.7
Materials for nondurable manufacturing	130.5	129.6	129.1	129.0	129.3	129.7	129.8	129.9	130.0	130.2	129.9	129.5	128.7	128.4	128.0
Materials for durable manufacturing	131.3	132.8	133.4	133.7	133.2	133.2	133.0	132.3	132.1	131.4	130.5	130.7	130.0	130.0	129.2
Components for manufacturing	126.9	126.4	126.5	126.4	126.4	126.2	126.2	126.0	126.0	126.0	126.0	126.0	126.0	125.9	125.9
Materials and components for construction	143.6	146.5	147.2	147.0	147.2	147.1	146.8	146.4	146.6	146.4	146.3	146.7	146.6	147.0	147.0
Processed fuels and lubricants	90.0	89.3	87.2	89.8	88.9	90.0	91.0	89.1	88.3	86.1	83.3	82.0	79.8	80.1	81.1
Containers	141.1	136.0	134.6	134.2	134.1	133.4	135.4	136.4	138.1	139.9	141.4	140.8	142.1	141.6	141.8
Supplies	135.9	135.9	136.2	136.0	135.9	135.8	136.2	135.8	136.1	136.0	135.5	135.2	135.0	134.8	134.8
Crude materials for further processing	113.8	111.1	110.4	107.1	107.1	107.5	108.5	112.7	114.7	107.8	101.7	100.4	99.2	100.0	100.2
Foodstuffs and feedstuffs	121.5	112.2	117.4	111.3	112.0	111.6	110.6	110.1	110.4	109.0	105.5	105.1	106.6	106.2	106.2
Crude nonfood materials	104.5	106.4	101.8	100.5	99.9	100.9	103.2	110.3	113.4	103.2	95.4	93.5	90.5	92.1	92.4
Special groupings:															
Finished goods, excluding foods	130.5	130.9	130.5	130.9	130.4	130.7	130.9	131.3	130.8	130.1	129.4	129.0	128.6	128.8	129.4
Finished energy goods	83.2	83.4	82.2	83.6	83.1	84.2	85.3	83.2	81.9	80.2	77.5	75.8	74.4	74.7	76.3
Finished goods less energy	139.6	140.2	140.3	139.9	139.7	139.9	139.7	140.9	140.6	140.3	140.0	140.2	140.1	140.3	140.5
Finished consumer goods less energy	140.1	141.0	141.1	140.6	140.3	140.7	140.6	141.8	141.4	141.2	140.8	141.1	140.9	141.3	141.7
Finished goods less food and energy	142.0	142.4	142.3	142.2	141.9	141.8	141.6	143.0	142.8	142.6	142.7	142.8	142.7	143.0	143.1
Finished consumer goods less food and energy	144.3	145.1	144.9	144.8	144.4	144.4	144.4	146.0	145.8	145.5	145.7	145.8	145.8	146.2	146.9
Consumer nondurable goods less food and energy	151.4	153.4	153.0	153.1	153.2	153.3	154.2	154.3	154.4	154.5	154.8	154.9	155.1	156.0	158.2
Intermediate materials less foods and feeds	125.6	125.7	125.3	125.7	125.6	125.8	126.1	125.6	125.6	125.1	124.5	124.3	123.6	123.7	123.8
Intermediate foods and feeds	128.1	125.4	128.3	126.4	124.6	124.6	126.0	122.6	124.3	123.5	118.7	118.9	117.1	116.0	116.3
Intermediate energy goods	89.8	89.0	87.0	89.5	88.6	89.7	90.7	88.8	88.0	85.9	83.0	81.8	79.5	80.0	80.8
Intermediate goods less energy	133.6	133.7	133.9	133.7	133.7	133.7	133.8	133.5	133.8	133.7	133.3	133.3	133.3	132.9	132.9
Intermediate materials less foods and energy	134.0	134.2	134.2	134.2	134.2	134.2	134.3	134.2	134.4	134.3	134.3	134.2	134.0	134.1	134.0
Crude energy materials	85.0	87.3	80.8	79.2	79.1	79.7	83.2	92.8	97.1	84.3	74.9	72.3	69.2	71.6	72.0
Crude materials less energy	130.0	123.5	127.5	123.1	123.1	123.3	122.2	121.5	121.6	120.1	117.0	116.8	117.3	116.7	116.7
Crude nonfood materials less energy	155.8	156.5	157.8	157.4	155.6	157.5	156.0	155.0	154.3	152.5	150.5	151.0	148.7	147.4	147.5

32. Producer Price Indexes for the net output of major industry groups

[December 1984 = 100, unless otherwise indicated]

SIC	Industry	Annual average		1997								1998				
		1996	1997	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
–	**Total mining industries**	84.4	86.1	80.8	79.9	79.5	80.2	82.9	90.2	93.2	83.2	76.4	74.5	72.0	73.6	73.9
10	Metal mining	92.1	85.8	89.7	89.4	85.7	86.4	84.0	83.2	78.9	74.8	73.5	75.8	74.6	76.0	76.1
12	Coal mining (12/85 = 100)	91.4	92.2	91.7	92.6	91.5	91.6	91.9	91.3	91.0	93.2	88.2	89.7	90.3	88.6	88.8
13	Oil and gas extraction (12/85 = 100)	84.8	87.5	80.2	78.9	78.8	79.7	83.5	93.4	98.0	84.5	76.2	73.2	69.7	72.0	72.3
14	Mining and quarrying of nonmetallic minerals, except fuels	127.1	128.8	128.3	128.9	129.2	129.2	129.3	129.6	129.7	129.9	130.6	131.0	131.3	132.0	132.4
–	**Total manufacturing industries**	127.1	127.5	127.6	127.2	126.9	127.4	127.3	127.6	127.5	127.0	126.4	126.2	125.7	126.0	126.2
20	Food and kindred products	127.1	127.9	128.9	128.3	128.0	128.6	127.9	127.5	127.5	127.1	125.8	126.1	125.5	125.4	125.8
21	Tobacco manufactures	199.1	210.8	209.2	209.6	209.4	209.4	219.4	219.4	219.3	219.3	219.6	223.8	223.8	230.9	137.7
22	Textile mill products	118.2	118.8	118.5	118.6	118.8	118.8	118.9	119.1	119.0	119.2	119.0	119.6	119.6	119.6	119.3
23	Apparel and other finished products made from fabrics and similar materials	122.3	123.4	123.3	123.4	123.4	123.5	123.7	123.4	124.2	124.2	124.4	124.4	124.5	124.5	124.7
24	Lumber and wood products, except furniture	153.5	158.9	160.7	159.8	160.1	159.6	158.9	157.3	158.2	157.9	157.4	158.6	157.9	158.4	157.4
25	Furniture and fixtures	136.2	138.2	138.2	138.2	138.5	138.3	138.6	138.6	138.9	138.9	139.1	139.6	139.7	139.3	139.0
26	Paper and allied products	138.6	133.5	131.5	131.7	132.0	132.8	134.1	134.6	135.9	137.3	137.7	137.3	137.8	137.2	137.6
27	Printing, publishing, and allied industries	165.6	169.1	168.2	168.4	168.7	168.9	169.2	170.7	171.1	171.3	173.2	173.1	173.0	173.8	174.4
28	Chemicals and allied products	145.8	147.1	147.0	147.0	147.1	147.2	147.1	147.3	147.3	147.3	147.3	147.4	146.9	146.8	148.4
29	Petroleum refining and related products	87.4	85.6	85.5	83.6	81.3	85.3	86.1	84.8	83.6	79.1	73.8	70.6	65.9	68.1	70.4
30	Rubber and miscellaneous plastics products	123.1	122.8	122.9	122.9	123.0	123.1	122.9	122.7	122.8	122.8	122.7	122.6	122.6	122.5	122.3
31	Leather and leather products	134.7	137.1	136.9	136.2	136.9	136.9	137.0	137.5	137.9	137.4	137.4	137.5	137.4	137.3	137.4
32	Stone, clay, glass, and concrete products	125.8	127.4	127.6	127.4	127.4	127.5	127.5	127.8	127.8	127.7	127.6	128.0	128.0	128.5	129.1
33	Primary metal industries	123.7	124.7	125.0	125.4	125.2	125.2	125.2	124.8	124.5	123.9	123.3	123.1	122.9	122.5	122.8
34	Fabricated metal products, except machinery and transportation transportation equipment	126.2	127.6	127.4	127.5	127.7	127.9	128.0	128.1	128.2	128.1	128.3	128.5	128.6	128.6	128.8
35	Machinery, except electrical	119.2	118.5	118.5	118.3	118.4	118.3	118.2	118.1	118.0	118.0	118.1	118.0	117.9	117.9	117.8
36	Electrical and electronic machinery, equipment, and supplies	113.2	111.6	111.8	111.8	111.7	111.1	111.1	110.8	110.8	110.8	110.8	110.6	110.6	110.4	110.2
37	Transportation	134.2	134.1	133.9	133.8	132.8	132.8	131.8	135.0	134.4	133.7	133.8	133.8	133.8	133.9	132.5
38	Measuring and controlling instruments; photographic, medical, and optical goods; watches and clocks	125.0	125.6	125.7	125.3	125.7	125.8	125.8	125.7	125.8	125.8	125.6	126.4	126.3	126.2	126.0
39	Miscellaneous manufacturing industries (12/85 = 100)	127.8	129.0	129.1	129.1	129.0	129.1	129.2	129.4	129.1	129.1	129.6	129.7	129.6	129.5	129.4
	Service industries:															
42	Motor freight transportation and warehousing (06/93 = 100)	106.3	108.9	108.8	109.0	109.1	109.3	109.4	109.3	109.0	109.4	110.5	110.8	110.6	111.0	111.1
43	U.S. Postal Service (06/89 = 100)	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3
44	Water transportation (12/92 = 100)	103.7	104.2	104.3	104.8	104.4	104.7	103.8	104.6	104.1	103.3	103.0	101.9	102.3	101.6	102.2
45	Transportation by air (12/92 = 100)	121.1	125.3	125.1	126.2	126.5	125.4	122.5	123.7	123.4	123.3	122.6	123.7	124.8	125.1	124.4
46	Pipelines, except natural gas (12/92 = 100)	104.6	98.8	98.9	98.9	98.7	98.7	98.7	98.7	98.7	98.7	99.3	99.3	99.3	99.4	99.4

33. Annual data: Producer Price Indexes, by stage of processing

[1982 = 100]

Index	1989	1990	1991	1992	1993	1994	1995	1996	1997
Finished goods									
Total	113.6	119.2	121.7	123.2	124.7	125.5	127.9	131.3	131.8
Foods	118.7	124.4	124.1	123.3	125.7	126.8	129.0	133.6	134.5
Energy	65.7	75.0	78.1	77.8	78.0	77.0	78.1	83.2	83.4
Other	122.1	126.6	131.1	134.2	135.8	137.1	140.0	142.0	142.4
Intermediate materials, supplies, and components									
Total	112.0	114.5	114.4	114.7	116.2	118.5	124.9	125.7	125.6
Foods	112.7	117.9	115.3	113.9	115.6	118.5	119.5	125.3	123.2
Energy	76.1	85.5	85.1	84.3	84.6	83.0	84.1	89.8	89.0
Other	120.2	120.9	121.4	122.0	123.8	127.1	135.2	134.0	134.2
Crude materials for further processing									
Total	103.1	108.9	101.2	100.4	102.4	101.8	102.7	113.8	111.1
Foods	111.2	113.1	105.5	105.1	108.4	106.5	105.8	121.5	112.2
Energy	75.9	85.9	80.4	78.8	76.7	72.1	69.4	85.0	87.3
Other	95.8	107.3	97.5	94.2	94.1	97.0	105.8	105.7	103.5

34. U.S. export price indexes by Standard International Trade Classification

[1995 = 100, unless otherwise indicated]

SITC Rev. 3	Industry	1997								1998				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
0	**Food and live animals**	101.2	98.5	97.8	99.7	99.5	98.5	97.6	96.7	94.9	92.5	92.5	91.2	91.5
01	Meat and meat preparations	95.7	95.3	95.7	96.2	95.2	95.2	96.1	94.6	91.4	90.9	92.1	92.2	93.7
04	Cereals and cereal preparations	99.7	92.3	89.9	93.2	95.0	93.5	94.9	94.4	88.9	91.5	90.4	86.2	85.9
05	Vegetables, fruit, and nuts, prepared fresh or dry	100.7	101.6	104.3	103.3	97.6	98.2	93.4	92.0	99.8	88.6	91.7	95.0	97.6
2	**Crude materials, inedible, except fuels**	93.0	93.4	93.6	92.7	91.6	88.7	88.9	87.8	84.7	85.0	84.2	83.2	83.0
21	Hides, skins, and furskins, raw	110.0	100.8	96.0	98.3	100.1	101.6	103.6	102.6	80.9	83.3	90.1	87.9	85.9
22	Oilseeds and oleaginous fruits	136.1	134.6	128.6	120.5	120.2	108.3	118.2	116.5	110.8	113.1	108.4	105.4	106.7
24	Cork and wood	94.2	93.2	92.8	92.4	90.9	88.6	85.8	85.6	85.8	85.2	84.1	84.1	82.5
25	Pulp and waste paper	60.5	65.9	69.1	71.4	68.2	69.4	68.3	66.8	63.8	64.7	65.0	64.2	63.5
26	Textile fibers and their waste	83.3	83.4	84.2	84.4	83.9	83.4	81.2	80.0	78.2	78.0	77.6	76.4	77.3
27	Crude fertilizers and crude minerals	97.3	97.8	97.9	97.9	97.9	97.9	97.8	97.4	97.5	97.2	97.1	97.1	97.0
28	Metalliferous ores and metal scrap	89.6	91.7	95.7	96.3	94.4	90.0	85.9	83.9	82.1	81.4	79.7	80.5	80.2
3	**Mineral fuels, lubricants, and related products**	110.7	110.9	110.9	111.2	111.8	112.6	112.0	112.8	109.4	108.5	106.4	104.5	104.6
32	Coal, coke, and briquettes	102.4	102.0	101.6	101.6	101.9	102.2	101.8	101.3	101.0	101.1	101.0	99.7	99.7
33	Petroleum, petroleum products, and related materials	120.0	119.4	120.9	121.3	121.8	121.3	120.1	119.0	116.0	114.3	110.5	108.6	108.9
4	**Animal and vegetable oils, fats, and waxes**	93.6	94.7	93.3	93.3	94.9	97.9	106.8	106.5	104.5	101.3	100.8	101.4	106.6
5	**Chemicals and related products, n.e.s.**	96.7	96.5	96.4	95.5	95.5	95.4	95.2	94.9	94.9	94.5	93.6	93.4	92.9
54	Medicinal and pharmaceutical products	101.5	101.5	101.1	101.1	101.2	100.8	100.9	100.9	101.9	101.6	102.3	101.6	101.6
55	Essential oils; polishing and cleaning preparations	102.8	102.9	103.1	102.6	103.7	103.6	102.1	101.9	101.3	102.0	101.5	101.2	101.4
57	Plastics in primary forms (12/92 = 100)	97.6	97.1	95.9	94.0	93.7	93.9	93.6	93.1	92.9	92.4	91.6	90.7	90.2
58	Plastics in nonprimary forms (12/92 = 100)	99.3	99.1	99.0	99.0	98.9	98.7	98.5	98.7	100.3	100.2	99.7	99.8	99.1
59	Chemical materials and products, n.e.s.	104.2	103.9	103.9	104.0	103.6	103.4	103.0	101.9	101.9	101.8	100.5	101.8	100.4
6	**Manufactured goods classified chiefly by materials**	97.7	98.2	98.5	98.6	98.7	98.7	98.9	98.5	98.1	98.5	98.3	98.3	98.1
62	Rubber manufactures, n.e.s.	103.1	103.2	103.1	102.2	101.9	102.2	102.1	102.1	101.8	101.8	102.1	102.0	101.7
64	Paper, paperboard, and articles of paper, pulp, and paperboard	82.9	83.5	84.4	85.3	85.0	85.3	85.2	85.1	84.7	85.0	84.7	84.6	84.1
66	Nonmetallic mineral manufactures, n.e.s.	104.1	104.3	104.5	104.6	106.1	106.1	106.3	107.1	106.7	107.3	107.0	107.0	106.9
68	Nonferrous metals	91.7	93.4	92.6	93.3	93.2	91.9	93.4	91.0	89.5	91.3	91.3	91.5	92.9
7	**Machinery and transport equipment**	100.4	100.6	100.5	100.6	100.1	100.0	100.1	99.8	99.6	99.5	99.3	99.1	99.2
71	Power generating machinery and equipment	106.0	106.0	105.9	106.2	106.2	106.2	106.3	106.2	106.8	106.7	106.8	107.0	107.0
72	Machinery specialized for particular industries	104.3	104.2	104.1	104.4	104.5	104.5	104.5	104.9	104.6	105.1	105.0	104.8	105.1
74	General industrial machines and parts, n.e.s., and machine parts	104.7	105.2	105.0	105.3	105.2	105.4	105.4	105.4	105.6	105.6	105.8	105.9	106.2
75	Computer equipment and office machines	85.1	84.7	84.0	84.0	83.7	83.0	82.7	81.6	80.8	80.5	79.8	78.9	78.8
76	Telecommunications and sound recording and reproducing apparatus and equipment	99.6	99.6	99.7	99.7	99.2	99.5	99.4	98.7	98.6	98.3	98.5	98.3	98.9
77	Electrical machinery and equipment	96.8	96.5	96.5	96.7	95.1	94.8	94.9	94.4	94.0	93.6	93.1	92.8	92.7
78	Road vehicles	101.7	101.8	102.0	101.9	101.7	101.8	101.9	102.0	102.0	101.9	101.8	101.9	101.9
87	**Professional, scientific, and controlling instruments and apparatus**	103.3	103.4	103.5	103.5	103.4	103.3	103.3	103.5	103.5	103.6	103.6	103.6	103.8

35. U.S. import price indexes by Standard International Trade Classification

[1995 = 100, unless otherwise indicated]

SITC Rev. 3	Industry	1997								1998				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
0	**Food and live animals**	102.1	103.7	100.5	100.9	101.3	100.4	99.4	99.6	99.2	97.5	97.9	99.4	97.6
01	Meat and meat preparations	103.5	101.9	101.9	104.2	103.9	102.7	102.7	104.2	101.3	101.3	101.2	101.7	101.2
03	Fish and crustaceans, mollusks, and other aquatic invertebrates	102.1	103.6	104.4	104.6	104.5	107.4	107.3	105.6	105.4	106.4	107.1	107.4	107.5
05	Vegetables, fruit, and nuts, prepared fresh or dry	101.0	101.7	101.2	103.2	103.4	103.1	103.8	102.5	102.9	93.8	95.7	100.9	99.0
07	Coffee, tea, cocoa, spices, and manufactures thereof	107.8	118.4	99.6	97.5	100.0	92.1	86.2	92.1	94.7	97.1	94.0	92.9	86.1
1	**Beverages and tobacco**	107.0	107.5	107.7	107.7	107.8	107.9	108.4	108.6	109.0	109.5	109.2	109.2	109.3
11	Beverages	103.5	104.0	104.2	104.2	104.3	104.4	105.1	105.2	105.4	105.9	105.8	105.8	105.9
2	**Crude materials, inedible, except fuels**	99.8	97.4	97.3	96.8	96.6	94.8	94.0	93.5	91.4	95.1	91.0	89.7	88.8
23	Crude rubber (including synthetic and reclaimed)	82.1	83.9	77.7	77.2	74.5	72.4	71.2	69.1	62.4	64.9	62.9	60.5	56.9
24	Cork and wood	126.9	122.5	123.3	120.9	121.2	113.1	114.0	113.1	109.7	110.0	110.6	110.1	106.7
25	Pulp and waste paper	64.4	65.8	66.5	67.9	68.2	69.0	69.2	68.7	68.3	64.5	64.2	63.7	62.9
28	Metalliferous ores and metal scrap	105.6	105.8	104.6	104.7	104.5	103.7	102.5	102.3	100.3	100.0	100.4	100.6	100.5
29	Crude animal and vegetable materials, n.e.s.	118.1	97.3	102.1	101.8	103.1	113.2	104.8	107.0	108.6	158.2	110.0	102.0	112.1
3	**Mineral fuels, lubricants, and related products**	106.6	104.6	104.4	106.2	107.0	113.1	111.8	103.3	93.5	87.2	80.2	80.8	81.7
33	Petroleum, petroleum products, and related materials	106.4	104.0	103.0	105.1	105.5	111.5	107.8	100.1	89.7	83.7	76.0	77.1	78.2
34	Gas, natural and manufactured	112.0	113.3	119.8	119.7	123.7	132.0	149.7	133.4	127.4	117.3	114.5	111.4	111.1
5	**Chemicals and related products, n.e.s.**	96.5	96.4	96.2	96.4	96.2	95.6	95.2	95.2	94.2	93.9	93.3	93.0	93.9
52	Inorganic chemicals	100.8	99.0	97.9	98.6	99.7	99.7	99.0	97.3	94.1	94.2	94.8	95.6	97.8
53	Dying, tanning, and coloring materials	97.1	97.9	97.7	95.4	94.0	94.2	96.3	96.9	95.3	94.9	94.9	94.7	94.8
54	Medicinal and pharmaceutical products	95.4	96.3	96.3	96.2	95.7	96.2	96.2	96.8	96.4	95.8	95.8	95.3	95.4
55	Essential oils; polishing and cleaning preparations	98.7	97.0	96.9	97.8	96.9	97.4	96.6	97.5	96.2	96.3	94.4	94.1	94.6
57	Plastics in primary forms (12/92 = 100)	90.9	91.6	91.7	91.9	92.6	92.7	91.6	92.0	92.4	96.5	94.4	94.1	94.1
58	Plastics in nonprimary forms (12/92 = 100)	85.8	88.6	88.7	87.4	86.9	85.9	82.9	82.8	82.6	82.6	81.5	81.9	81.7
59	Chemical materials and products, n.e.s.	104.2	103.5	103.2	103.3	103.2	102.8	102.8	103.1	102.9	101.4	101.7	101.3	101.8
6	**Manufactured goods classified chiefly by materials**	96.4	96.8	96.6	96.5	96.8	96.7	96.6	96.0	95.2	94.8	94.7	94.6	94.7
62	Rubber manufactures, n.e.s.	97.4	97.6	96.7	95.8	95.1	95.3	95.4	95.5	95.2	95.2	95.1	95.2	95.1
64	Paper, paperboard, and articles of paper, pulp, and paperboard	87.9	87.5	87.6	88.0	88.8	88.9	89.7	88.5	87.6	87.5	87.9	88.0	87.7
66	Nonmetallic mineral manufactures, n.e.s.	103.2	102.6	103.0	102.5	102.1	102.2	102.2	101.7	101.3	100.7	100.6	100.8	100.7
68	Nonferrous metals	91.8	95.1	94.0	94.6	96.9	95.3	93.4	92.1	90.5	90.6	91.2	91.8	94.0
69	Manufactures of metals, n.e.s.	98.9	99.0	98.8	98.3	98.1	98.5	98.3	98.5	97.9	97.5	97.3	96.9	96.3
7	**Machinery and transport equipment**	95.5	95.7	95.4	95.0	94.8	94.5	94.3	94.0	93.6	93.2	92.9	92.4	92.1
72	Machinery specialized for particular industries	98.9	99.3	99.3	98.6	98.4	98.6	99.0	99.1	98.7	98.1	98.1	97.6	97.5
74	General industrial machines and parts, n.e.s., and machine parts	97.9	98.3	98.2	97.6	97.2	97.4	97.3	97.3	97.1	96.5	96.6	96.2	96.4
75	Computer equipment and office machines	81.9	81.2	80.2	78.9	78.2	77.1	76.7	76.8	75.5	74.4	73.0	71.8	70.7
76	Telecommunications and sound recording and reproducing apparatus and equipment	93.1	93.4	93.3	92.9	92.6	92.3	91.9	91.7	91.4	90.9	90.7	90.7	90.6
77	Electrical machinery and equipment	89.8	90.2	89.7	89.6	89.2	88.6	87.7	86.6	86.2	85.7	85.6	85.2	85.1
78	Road vehicles	100.4	100.8	100.9	101.1	101.3	101.6	101.6	101.5	101.4	101.3	101.5	101.5	101.2
85	Footwear	100.9	101.1	101.2	101.1	100.8	101.0	101.0	101.2	101.2	101.1	100.7	100.6	100.7
88	Photographic apparatus, equipment, and supplies, and optical goods, n.e.s.	94.3	94.4	95.1	94.4	93.6	93.4	92.6	93.1	92.3	92.1	91.8	91.6	91.2

36. U.S. export price indexes by end-use category

[1995 = 100]

Category	1997								1998				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
ALL COMMODITIES	99.4	99.3	99.3	99.3	99.0	98.6	98.6	98.2	97.5	97.2	96.9	96.5	96.6
Foods, feeds, and beverages	104.6	102.3	101.2	101.8	101.8	99.8	100.2	99.3	96.9	95.0	94.4	93.2	94.1
Agricultural foods, feeds, and beverages	106.3	103.8	102.4	102.5	102.2	100.1	100.7	100.0	97.6	96.2	95.3	94.1	95.0
Nonagricultural (fish, beverages) food products	88.0	87.6	89.0	96.2	98.5	98.0	95.7	94.1	90.9	83.8	86.2	85.8	85.7
Industrial supplies and materials	95.2	95.5	95.8	95.4	95.1	94.8	94.5	93.7	92.3	92.0	91.3	91.0	90.8
Agricultural industrial supplies and materials	92.6	91.6	92.2	92.3	93.0	93.1	94.0	92.7	88.3	87.1	88.0	87.2	87.5
Fuels and lubricants	110.0	110.0	110.1	110.4	110.9	111.3	110.7	110.2	107.1	106.1	103.3	102.0	102.1
Nonagricultural supplies and materials, excluding fuel and building materials	92.8	93.3	93.6	93.2	92.8	92.4	92.3	91.4	90.4	90.3	89.6	89.5	89.3
Selected building materials	95.4	94.8	94.7	93.8	92.8	91.2	89.3	89.3	89.1	88.5	88.0	87.5	86.5
Capital goods	100.1	100.2	100.0	100.1	99.5	99.3	99.3	98.9	98.8	98.8	98.5	98.2	98.2
Electric and electrical generating equipment	100.6	101.1	101.2	102.2	101.8	101.9	102.2	102.2	101.7	101.1	101.3	100.8	100.8
Nonelectrical machinery	97.9	97.7	97.5	97.5	96.7	96.5	96.4	95.9	95.8	95.8	95.5	95.2	95.2
Automotive vehicles, parts, and engines	102.1	102.1	102.3	102.3	102.1	102.2	102.3	102.3	102.3	102.2	102.2	102.3	102.3
Consumer goods, excluding automotive	101.9	102.0	102.2	102.2	102.6	102.6	102.6	102.7	102.5	102.5	102.5	102.2	102.4
Nondurables, manufactured	101.2	101.5	101.7	101.7	102.3	102.1	102.0	102.1	102.2	102.2	102.3	102.1	102.1
Durables, manufactured	102.1	102.0	102.0	102.1	101.9	102.2	102.1	102.0	101.7	101.6	101.3	101.1	101.5
Agricultural commodities	103.4	101.3	100.2	100.3	100.2	98.4	99.1	98.3	95.6	94.2	93.6	92.5	93.3
Nonagricultural commodities	99.0	99.1	99.1	99.1	98.8	98.6	98.5	98.1	97.7	97.5	97.2	97.0	96.9

37. U.S. import price indexes by end-use category

[1995 = 100]

Category	1997								1998				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
ALL COMMODITIES	98.3	98.2	98.0	97.9	97.8	98.0	97.6	96.6	95.3	94.4	93.6	93.3	93.2
Foods, feeds, and beverages	100.8	101.9	99.4	99.2	99.6	98.8	97.9	98.1	97.7	96.7	96.6	97.4	96.5
Agricultural foods, feeds, and beverages	100.3	101.3	97.5	97.3	97.9	96.3	95.2	95.7	95.3	93.6	93.4	94.3	92.7
Nonagricultural (fish, beverages) food products	101.8	103.1	104.2	104.1	104.1	105.2	105.2	104.1	103.9	104.7	104.9	105.5	106.2
Industrial supplies and materials	101.0	100.4	100.1	100.8	101.1	102.5	101.8	98.6	94.6	92.2	89.8	89.9	90.2
Fuels and lubricants	106.8	104.9	104.6	106.6	107.2	113.2	111.5	103.3	93.9	87.9	80.9	81.6	82.5
Petroleum and petroleum products	106.6	104.5	103.1	105.5	105.7	111.6	107.7	100.4	90.4	84.5	76.8	77.7	78.8
Paper and paper base stocks	82.0	81.9	82.1	82.7	83.4	83.7	84.4	83.3	82.4	81.3	81.6	81.4	81.1
Materials associated with nondurable supplies and materials	96.3	95.8	95.5	95.6	95.4	94.6	94.3	93.8	92.7	92.2	94.6	91.4	91.6
Selected building materials	114.8	112.3	112.8	111.7	111.6	107.6	108.3	107.6	105.0	104.7	104.6	104.3	102.5
Unfinished metals associated with durable goods	96.2	98.0	97.4	97.3	98.5	97.4	96.4	95.5	94.0	93.8	94.0	94.1	95.2
Nonmetals associated with durable goods	95.8	95.7	95.6	95.1	94.1	94.2	94.2	94.2	93.7	92.6	92.5	91.8	91.5
Capital goods	92.0	92.1	91.7	91.0	90.5	89.8	89.4	89.0	88.2	87.4	87.0	86.4	86.0
Electric and electrical generating equipment	97.3	97.1	96.9	97.1	96.8	96.8	96.6	96.0	95.5	95.8	95.5	94.8	94.4
Nonelectrical machinery	90.0	90.1	89.7	88.9	88.3	87.4	87.0	86.5	85.7	84.7	84.3	83.6	83.2
Automotive vehicles, parts, and engines	100.3	100.8	100.9	101.0	101.2	101.4	101.4	101.3	101.3	101.3	101.4	101.3	101.2
Consumer goods, excluding automotive	99.7	99.5	99.6	99.4	99.2	99.3	99.1	99.2	99.0	99.2	98.6	98.2	98.2
Nondurables, manufactured	101.0	101.0	100.9	100.8	100.8	101.1	100.8	101.0	101.0	101.0	100.9	100.7	100.7
Durables, manufactured	98.0	98.1	98.1	97.8	97.4	97.3	97.1	97.2	96.9	96.6	96.3	95.8	95.6
Nonmanufactured consumer goods	102.8	99.1	99.8	99.8	99.9	101.4	100.1	99.4	98.9	105.8	98.1	97.5	98.8

38. U.S. international price indexes for selected categories of services

[1990 = 100, unless otherwise indicated]

Category	1996				1997				1998
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.
Air freight (inbound) (9/90 = 100)	95.9	95.1	95.6	95.0	89.5	89.9	88.5	86.5	82.9
Air freight (outbound) (9/92 = 100)	99.1	99.4	98.9	99.2	99.8	99.2	99.6	97.7	97.2
Air passenger fares (U.S. carriers)	98.3	104.3	107.3	101.6	97.1	112.1	109.2	99.5	99.3
Air passenger fares (foreign carriers)	96.3	103.0	105.5	100.7	98.5	106.1	104.6	99.7	97.7
Ocean liner freight (inbound)	101.5	99.6	98.0	98.4	97.6	96.8	94.9	92.9	92.7

39. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

[1992 = 100]

Item	Quarterly indexes												
	1995				1996				1997				1998
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
Business													
Output per hour of all persons	100.1	100.3	100.6	101.2	102.0	102.8	102.6	103.1	103.5	104.1	105.0	105.4	105.9
Compensation per hour	105.7	106.5	107.3	108.3	109.3	110.8	111.8	112.7	113.8	114.7	115.9	117.5	118.8
Real compensation per hour	98.2	98.2	98.4	98.7	98.9	99.3	99.6	99.6	100.1	100.5	101.1	101.9	102.9
Unit labor costs	105.5	106.1	106.7	107.0	107.2	107.8	108.9	109.3	110.0	110.2	110.4	111.5	112.2
Unit nonlabor payments	108.3	108.4	108.8	109.1	110.5	111.0	110.7	111.3	111.6	112.4	112.9	111.6	110.6
Implicit price deflator	106.5	107.0	107.4	107.8	108.4	108.9	109.6	110.0	110.6	111.0	111.3	111.5	111.6
Nonfarm business													
Output per hour of all persons	100.3	100.5	100.8	101.4	102.1	102.8	102.6	103.1	103.4	104.0	104.9	105.3	105.6
Compensation per hour	105.5	106.3	107.1	108.1	109.1	110.5	111.4	112.3	113.5	114.4	115.5	117.0	118.2
Real compensation per hour	98.1	98.0	98.3	98.6	98.7	99.1	99.3	99.3	99.8	100.2	100.7	101.4	102.4
Unit labor costs	105.2	105.8	106.3	106.7	106.9	107.5	108.6	109.0	109.8	110.0	110.1	111.1	112.0
Unit nonlabor payments	109.6	109.6	109.7	109.8	111.0	111.3	110.9	111.4	111.7	112.4	113.2	112.1	111.2
Implicit price deflator	106.8	107.2	107.5	107.8	108.4	108.8	109.4	109.8	110.5	110.9	111.2	111.5	111.7
Nonfinancial corporations													
Output per hour of all employees	102.9	103.4	104.7	105.4	106.0	107.1	107.8	108.3	108.8	109.4	111.1	111.3	112.0
Compensation per hour	105.1	105.9	106.6	107.5	108.3	109.7	110.7	111.5	112.6	113.5	114.7	116.0	117.2
Real compensation per hour	97.7	97.6	97.8	98.0	98.0	98.3	98.6	98.6	99.0	99.4	100.0	100.6	101.6
Total unit costs	101.6	101.8	101.1	101.2	101.4	101.4	101.5	101.5	101.8	102.0	101.5	102.1	102.3
Unit labor costs	102.2	102.4	101.9	102.0	102.1	102.4	102.7	102.9	103.5	103.7	103.2	104.3	104.7
Unit nonlabor costs	99.8	100.1	99.0	99.1	99.2	98.4	98.1	97.4	97.0	97.1	96.6	95.9	95.5
Unit profits	135.2	134.9	145.5	147.3	152.5	154.7	156.0	156.4	157.9	159.1	164.5	159.8	157.2
Unit nonlabor payments	109.6	109.7	111.9	112.4	114.0	114.0	114.1	113.7	113.8	114.3	115.4	113.6	112.6
Implicit price deflator	104.6	104.8	105.1	105.4	106.0	106.2	106.4	106.5	106.9	107.2	107.2	107.3	107.3
Manufacturing													
Output per hour of all persons	107.7	109.1	110.5	111.2	112.7	114.1	115.8	116.9	117.8	118.9	121.2	122.5	122.7
Compensation per hour	107.2	108.2	109.2	110.1	110.8	112.0	112.9	113.5	114.7	115.4	116.4	118.1	119.0
Real compensation per hour	99.7	99.8	100.2	100.4	100.2	100.4	100.6	100.3	100.8	101.1	101.5	102.5	103.1
Unit labor costs	99.6	99.2	98.9	99.0	98.3	98.2	97.5	97.1	97.3	97.1	96.0	96.5	97.0

40. Annual indexes of multifactor productivity and related measures, selected years

[1992 = 100]

Item	1960	1970	1973	1980	1989	1990	1991	1993	1994	1995	1996
Private business											
Productivity:											
Output per hour of all persons	50.8	70.1	75.5	83.8	95.4	96.1	96.7	100.2	100.5	100.5	102.6
Output per unit of capital services	119.1	117.8	122.0	108.1	103.9	102.1	98.6	100.7	102.3	101.5	101.3
Multifactor productivity	70.9	86.6	94.6	95.4	99.9	99.5	98.1	100.2	100.6	100.3	101.3
Output	34.0	51.6	61.3	72.6	97.8	98.6	96.9	102.7	107.0	109.6	113.4
Inputs:											
Labor input	60.7	68.4	72.6	80.5	99.7	100.3	99.0	102.8	107.2	109.9	112.0
Capital services	28.6	43.8	50.3	67.2	94.1	96.6	98.3	102.0	104.6	108.0	112.0
Combined units of labor and capital input	48.0	59.6	64.8	76.1	97.9	99.1	98.8	102.6	106.4	109.3	112.0
Capital per hour of all persons	42.7	59.5	63.9	77.5	91.8	94.1	98.1	99.5	98.3	99.1	101.3
Private nonfarm business											
Productivity:											
Output per hour of all persons	54.3	72.2	80.3	85.5	95.7	96.2	96.9	100.1	100.5	100.7	102.6
Output per unit of capital services	127.4	124.3	128.2	111.3	104.5	102.5	98.8	100.8	102.1	101.4	101.1
Multifactor productivity	75.0	89.3	97.5	97.5	100.4	99.7	98.3	100.2	100.5	100.3	101.2
Output	33.7	51.8	61.8	73.1	98.1	98.8	97.0	103.0	107.1	109.9	113.7
Inputs:											
Labor input	56.5	66.7	71.2	79.4	99.6	100.3	98.9	103.1	107.3	110.0	112.3
Capital services	26.5	41.7	48.2	65.6	93.9	96.4	98.2	102.2	104.9	108.4	112.5
Combined units of labor and capital input	44.9	58.0	63.4	74.9	97.8	99.1	98.6	102.8	106.6	109.5	112.4
Capital per hour of all persons	42.6	58.1	62.6	76.8	91.6	93.9	98.0	99.3	98.4	99.3	101.5
Manufacturing											
Productivity:											
Output per hour of all persons	41.0	54.8	62.2	70.5	90.8	93.0	94.9	102.0	105.2	109.6	114.7
Output per unit of capital services	126.3	119.6	129.1	103.1	103.7	101.1	97.2	101.7	105.3	106.7	107.4
Multifactor productivity	71.7	83.2	90.8	86.9	99.6	99.2	98.3	101.3	104.3	108.3	111.1
Output	37.7	57.1	68.7	75.8	97.4	97.5	95.4	103.4	109.1	114.1	118.8
Inputs:											
Hours of all persons	92.0	104.2	110.5	107.6	107.2	104.8	100.6	101.4	103.7	104.1	103.6
Capital services	29.8	47.8	53.2	73.5	93.9	96.5	98.2	101.7	103.7	106.9	110.6

NOTE: Productivity and output in this table have not been revised for consistency with the December 1991 comprehensive revisions to the National Income and Product Accounts.

41. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

[1992 = 100]

Item	1960	1970	1973	1980	1988	1989	1990	1991	1993	1994	1995	1996	1997
Business													
Output per hour of all persons	51.4	70.5	78.4	84.2	94.6	95.4	96.1	96.7	100.2	100.6	100.5	102.6	104.5
Compensation per hour	13.6	23.6	29.0	54.5	83.5	85.8	90.7	95.1	102.6	104.3	106.9	111.1	115.4
Real compensation per hour	64.7	85.4	91.6	92.7	99.0	97.1	97.4	97.9	99.6	98.7	98.4	99.3	100.9
Unit labor costs	26.6	33.5	37.0	64.7	88.2	89.9	94.4	98.3	102.4	103.7	106.3	108.3	110.5
Unit nonlabor payments	24.6	30.6	36.6	59.6	84.1	91.3	93.5	96.6	102.7	106.8	108.7	110.9	112.1
Implicit price deflator	25.8	32.4	36.8	62.8	86.8	90.4	94.1	97.7	102.5	104.8	107.2	109.2	111.1
Nonfarm business													
Output per hour of all persons	54.8	72.6	80.7	86.0	95.2	95.7	96.2	96.9	100.1	100.5	100.7	102.6	104.3
Compensation per hour	14.3	23.8	29.2	54.8	83.6	85.8	90.6	95.1	102.3	104.1	106.7	110.8	115.0
Real compensation per hour	67.7	86.1	92.3	93.3	99.1	97.1	97.3	97.9	99.3	98.5	98.3	99.1	100.6
Unit labor costs	26.1	32.8	36.2	63.8	87.8	89.7	94.1	98.1	102.2	103.6	106.0	108.0	110.3
Unit nonlabor payments	24.0	30.3	34.3	58.6	83.8	90.7	93.2	96.8	103.1	107.4	109.7	111.2	112.3
Implicit price deflator	25.3	31.9	35.5	61.9	86.4	90.0	93.8	97.6	102.5	104.9	107.3	109.1	111.0
Nonfinancial corporations													
Output per hour of all employees	54.5	69.0	74.4	80.3	96.7	95.4	96.1	97.5	101.2	103.3	104.1	107.3	110.2
Compensation per hour	15.6	25.4	30.7	56.7	84.8	86.9	91.4	95.6	102.1	103.9	106.3	110.1	114.2
Real compensation per hour	73.9	91.7	97.2	96.5	100.6	98.4	98.1	98.5	99.1	98.4	97.9	98.4	99.9
Total unit costs	27.8	36.1	40.3	70.2	88.2	92.5	96.2	99.3	100.5	100.3	101.4	101.4	101.9
Unit labor costs	28.6	36.7	41.3	70.5	87.7	91.1	95.2	98.0	100.9	100.6	102.1	102.6	103.7
Unit nonlabor costs	25.3	34.3	37.5	69.2	89.7	96.3	99.1	103.0	99.4	99.7	99.5	98.3	96.6
Unit profits	47.7	42.0	52.8	64.4	103.8	96.0	94.6	93.9	113.3	134.5	140.8	154.9	160.3
Unit nonlabor payments	31.5	36.4	41.7	67.9	93.6	96.2	97.9	100.5	103.2	109.4	110.9	114.0	114.3
Implicit price deflator	29.6	36.6	41.5	69.7	89.6	92.8	96.1	98.8	101.7	103.4	105.0	106.3	107.2
Manufacturing													
Output per hour of all persons	40.9	54.7	62.1	70.4	90.7	90.8	93.0	94.9	102.0	105.2	109.6	114.7	120.0
Compensation per hour	14.9	23.8	28.6	55.8	84.0	86.8	91.0	95.7	102.9	105.6	108.7	112.1	116.1
Real compensation per hour	70.6	86.1	90.5	94.9	99.6	98.2	97.6	98.6	99.9	100.0	100.1	100.3	101.5
Unit labor costs	36.5	43.5	46.1	79.2	92.6	95.5	97.8	100.9	100.9	100.4	99.2	97.8	96.7
Unit nonlabor payments	26.4	30.0	36.8	79.2	90.8	95.5	99.2	98.6	100.8	102.9	106.5	108.4	–
Implicit price deflator	30.2	35.2	40.4	79.2	91.5	95.5	98.7	99.4	100.8	101.9	103.7	104.4	–

– Data not available.

42. Annual indexes of output per hour for selected industries

[1987 = 100]

Industry	SIC	1973	1984	1985	1986	1988	1989	1990	1991	1992	1993	1994	1995
Iron mining, usable ore	101	50.8	70.0	76.1	79.3	103.1	98.4	88.5	85.0	83.3	86.9	85.0	95.9
Copper mining, recoverable metal	102	42.4	75.9	93.6	109.7	109.1	106.5	102.7	100.5	115.2	118.1	126.0	120.3
Coal mining	12	68.9	83.4	85.1	92.4	110.5	116.4	118.3	122.1	132.7	140.4	147.3	153.9
Crude petroleum and natural gas production	131	173.5	81.9	83.0	90.3	100.9	98.0	96.9	97.9	102.1	105.9	112.4	120.5
Nonmetallic minerals, except fuels	14	86.5	94.0	95.1	95.1	101.0	99.6	101.4	98.5	103.0	100.8	104.4	103.0
Meat packing plants	2011	65.1	93.6	98.3	98.7	100.9	97.9	96.8	100.2	104.5	105.1	101.0	101.7
Sausages and other prepared meats	2013	67.2	99.3	97.8	98.6	107.1	105.9	97.4	95.9	104.6	105.0	101.4	105.3
Poultry dressing and processing	2015	58.0	99.1	100.5	95.6	96.2	105.2	108.6	115.4	119.6	119.8	119.4	122.5
Cheese, natural and processed	2022	72.1	85.1	88.2	93.5	99.8	102.6	108.2	114.6	121.8	115.5	117.5	120.5
Fluid milk	2026	54.6	88.9	92.0	96.0	102.3	103.7	103.3	104.3	104.0	107.1	112.9	115.8
Canned fruits and vegetables	2033	70.1	87.4	92.8	99.1	98.7	92.9	93.8	100.1	101.5	106.6	101.5	109.3
Frozen fruits and vegetables	2037	77.9	99.7	95.2	103.3	94.0	98.0	90.0	94.6	96.4	102.8	109.3	111.1
Flour and other grain mill products	2041	68.5	91.7	95.8	95.9	102.5	102.5	107.9	108.3	111.9	122.2	126.8	117.6
Cereal breakfast foods	2043	65.6	92.8	97.1	98.6	98.6	95.5	100.2	102.3	99.1	95.5	106.6	118.4
Rice milling	2044	59.3	63.8	68.6	72.7	83.1	97.5	104.9	99.3	101.4	129.5	109.2	102.6
Wet corn milling	2046	24.1	74.9	74.6	97.3	96.1	103.6	103.8	100.4	101.8	112.0	110.0	122.5
Prepared feeds for animals and fowls	2047,48	51.6	89.2	96.9	95.2	101.5	103.7	107.0	108.0	108.1	110.7	108.5	115.6
Bakery products	205	82.3	93.4	95.6	100.1	93.4	91.0	93.2	89.2	89.4	90.3	91.1	92.2
Raw and refined cane sugar	2061,62	78.5	89.1	96.6	96.9	99.7	101.8	107.7	110.3	111.7	120.2	115.0	121.8
Beet sugar	2063	75.9	79.7	73.4	80.8	97.6	92.1	97.6	102.3	110.8	109.8	124.2	135.9
Malt beverages	2082	43.3	77.7	73.7	85.0	99.1	105.2	110.6	109.6	113.4	112.6	117.5	118.0
Bottled and canned soft drinks	2086	49.2	81.6	85.2	91.4	109.8	119.4	126.7	135.1	144.2	144.7	150.4	160.0
Fresh or frozen prepared fish	2092	93.3	89.4	87.8	91.2	100.0	94.6	88.9	87.4	95.6	100.1	93.2	88.1
Cigarettes, chewing and smoking tobacco	211,3	79.4	91.3	93.6	95.4	104.8	106.7	109.9	111.6	113.4	101.6	130.1	149.2
Cotton and synthetic broadwoven fabrics	221,2	58.1	91.1	94.8	101.1	100.0	103.9	108.1	113.8	118.4	125.8	134.1	142.8
Hosiery	2251,52	63.2	102.4	100.9	102.5	108.1	110.9	109.2	115.7	122.2	117.4	124.8	127.1
Yarn spinning mills	2281	55.9	86.2	89.6	93.2	98.5	103.3	106.0	105.5	114.1	120.0	125.5	133.2
Men's and boys' suits and coats	231	75.6	93.2	106.3	103.5	102.4	101.9	98.7	91.4	102.4	109.0	129.1	121.5
Housefurnishings, except curtains and draperies	2392	87.2	83.6	92.4	93.6	99.8	96.8	101.3	110.9	117.9	118.7	114.1	115.4
Sawmills and planing mills, general	2421	68.3	89.7	93.5	102.3	101.2	100.1	99.9	102.9	108.9	101.5	103.2	110.3
Hardwood dimension and flooring mills	2426	84.0	85.6	95.1	98.8	97.5	96.9	95.7	98.6	105.4	111.2	111.0	117.1
Millwork	2431	104.2	100.4	97.4	102.2	98.2	97.8	97.8	95.7	93.4	92.5	88.5	86.0
Wood kitchen cabinets	2434	80.5	91.6	87.1	85.2	97.7	91.1	93.6	92.3	102.0	101.9	101.3	102.8
Hardwood veneer and plywood	2435	80.2	83.9	84.5	83.2	99.0	98.9	92.2	93.3	104.1	106.1	90.5	84.2
Softwood veneer and plywood	2436	67.7	87.1	88.3	90.4	100.6	102.6	108.3	114.3	109.2	103.4	101.4	101.5
Wood containers	244	–	103.4	99.6	98.7	103.2	108.8	111.6	113.5	109.8	100.5	101.0	107.1
Mobile homes	2451	–	94.4	94.3	94.4	100.6	98.8	101.2	102.5	102.4	103.8	97.6	99.7
Wood household furniture	2511,17	88.5	96.9	95.0	99.6	100.8	101.2	102.5	101.3	106.5	106.2	105.7	109.1
Upholstered household furniture	2512	75.1	96.2	96.3	101.7	98.8	101.2	107.7	115.1	120.0	120.0	130.6	138.7
Metal household furniture	2514	68.7	84.9	89.4	95.3	100.2	100.7	101.4	107.2	109.5	106.8	96.1	95.1
Mattresses and bedsprings	2515	68.0	84.1	79.5	85.5	92.5	106.5	106.2	108.9	103.4	104.4	105.5	110.9
Wood office furniture	2521	82.5	99.3	99.4	96.2	95.4	95.4	97.4	101.3	107.1	104.4	104.0	103.3
Office furniture, except wood	2522	70.6	97.6	96.9	100.6	96.0	98.7	95.6	92.9	93.9	94.3	95.4	98.4
Pulp, paper, and paperboard mills	261,2,3	67.1	89.7	87.6	93.3	103.1	103.2	102.6	102.1	104.7	104.5	112.4	116.2
Corrugated and solid fiber boxes	2635	70.3	96.7	99.6	102.8	99.8	98.1	100.9	100.8	101.9	105.5	110.0	107.6
Folding paperboard boxes	2657	86.4	93.4	90.0	88.5	101.6	105.4	105.3	110.9	116.4	117.9	122.9	126.8
Paper and plastic bags	2673,74	90.7	99.9	99.7	101.8	97.7	93.7	92.2	89.5	93.9	92.0	96.5	91.7
Alkalies and chlorine	2812	38.4	66.6	70.8	97.7	101.6	92.5	92.3	86.2	87.7	84.8	84.1	87.7
Inorganic pigments	2816	72.6	81.4	84.4	88.6	103.3	107.8	104.5	98.9	107.8	107.8	115.0	108.1
Industrial inorganic chemicals, n.e.s.	2819 pt.	90.6	88.4	87.3	88.6	97.5	105.9	109.0	102.3	104.9	110.7	113.2	126.5
Synthetic fibers	2823,24	38.4	79.8	79.3	90.8	102.9	104.1	98.7	97.5	99.3	112.3	119.4	125.7
Soaps and detergents	2841	89.1	90.5	91.5	92.3	102.4	109.4	128.2	126.4	115.3	112.6	111.7	126.0
Cosmetics and other toiletries	2844	88.6	87.3	90.3	96.6	105.2	102.7	101.1	103.9	108.4	108.5	111.6	115.2
Paints and allied products	285	63.2	93.6	96.9	98.0	101.4	103.3	106.3	104.3	102.9	108.8	116.7	116.6
Industrial organic chemicals, n.e.c.	2869	73.1	89.6	87.8	92.3	110.5	110.5	99.0	92.6	91.6	88.5	96.2	93.3
Nitrogenous fertilizers	2873	65.4	101.1	100.7	90.5	101.3	103.3	107.7	108.4	111.8	117.5	111.1	107.6
Phosphatic fertilizers	2874	62.4	88.4	84.2	79.6	92.0	83.3	99.7	107.3	105.0	106.0	122.6	118.1
Fertilizers, mixing only	2875	90.5	97.8	100.8	95.1	104.7	112.4	112.8	114.6	127.1	139.1	118.9	119.9
Agricultural chemicals, n.e.c.	2879	74.3	98.8	92.9	93.2	108.4	108.9	106.2	102.2	108.4	111.0	115.6	124.9
Petroleum refining	291	84.0	78.7	84.7	94.9	105.3	109.6	109.2	106.6	111.3	120.1	123.8	133.0
Tires and inner tubes	301	56.0	88.8	89.3	92.6	102.9	103.8	103.0	102.4	107.8	116.5	124.1	131.4
Rubber and plastics hose and belting	3052	78.4	104.9	100.1	102.1	108.2	97.8	103.3	96.1	104.3	111.3	102.9	102.0
Miscellaneous plastics products, n.e.c.	308	72.8	86.4	88.2	88.9	100.1	101.1	105.3	107.5	114.0	116.2	119.8	120.2
Footwear, except rubber	314	90.7	98.8	100.3	101.9	102.3	100.9	92.8	93.1	93.3	96.4	106.0	101.2
Glass containers	3221	75.2	97.4	93.4	98.5	99.6	101.6	107.5	108.1	111.5	106.0	111.0	109.9
Cement, hydraulic	324	71.3	89.4	91.8	97.1	103.2	110.2	112.4	108.3	115.1	119.9	125.6	123.4
Clay construction products	3251,53,59	78.5	92.7	94.2	95.5	105.2	98.3	102.3	97.4	98.9	102.3	108.0	111.3
Clay refractories	3255	80.1	96.9	94.9	100.8	102.3	98.5	103.6	97.9	98.6	95.0	107.3	96.0
Concrete products	3271,72	92.5	98.3	99.5	104.4	102.1	104.8	103.8	104.9	103.2	109.3	108.6	114.3
Ready-mixed concrete	3273	99.1	92.9	93.6	96.0	100.2	101.0	100.2	96.7	98.2	96.9	93.0	95.8
Steel	331	64.2	81.3	85.8	89.7	113.5	108.5	110.5	108.2	117.7	134.0	144.6	145.4
Gray and ductile iron foundries	3321	91.3	99.1	96.9	99.3	108.0	106.9	107.9	104.6	107.7	113.1	115.5	112.4
Steel foundries	3324,25	105.8	102.4	99.5	104.9	95.5	96.3	96.9	94.8	95.6	101.5	102.2	106.2
Primary copper	3331	32.8	57.6	73.8	88.7	103.8	94.7	84.9	82.5	71.9	86.9	74.0	77.3
Primary aluminum	3334	73.6	100.7	97.6	102.7	102.3	104.8	106.5	110.6	109.7	105.7	99.0	102.2
Copper rolling and drawing	3351	77.5	84.7	86.2	92.3	93.0	89.1	90.7	86.4	83.0	89.2	96.6	96.6

See footnotes at end of table.

42. Continued—Annual indexes of output per hour for selected industries

[1987 = 100]

Industry	SIC	1973	1984	1985	1986	1988	1989	1990	1991	1992	1993	1994	1995
Aluminum rolling and drawing	3353,54,55	79.0	92.3	85.7	95.8	96.3	90.6	91.2	90.3	96.5	93.9	99.6	93.9
Metal cans	3411	59.2	101.1	99.2	95.9	106.9	108.1	117.5	123.8	129.7	134.6	140.7	146.3
Hand and edge tools, n.e.c.	3423	108.6	97.9	98.8	97.1	100.5	101.0	95.0	93.1	93.1	93.3	100.8	98.4
Heating equipment, except electric	3433	78.0	91.6	91.9	96.2	113.7	105.0	114.0	119.4	121.2	121.8	130.2	131.1
Fabricated structural metal	3441	97.1	91.2	99.0	99.0	100.4	97.6	101.2	104.5	103.6	108.1	109.8	110.1
Metal doors, sash, and trim	3442	90.5	101.4	104.8	102.0	104.6	105.8	103.1	103.0	106.7	105.5	103.3	96.8
Fabricated plate work	3443	–	88.3	87.5	86.4	96.2	90.3	94.1	94.3	98.3	98.3	109.3	109.4
Bolts, nuts, rivets, and washers	3452	75.8	85.3	88.8	91.0	97.0	93.8	93.7	96.1	91.9	92.8	95.8	100.5
Automotive stampings	3465	74.9	100.5	94.5	95.7	102.8	101.8	96.1	97.3	113.8	120.8	124.9	128.4
Metal stampings, n.e.c.	3469	96.8	94.3	88.6	93.9	98.0	95.3	90.4	89.5	98.8	104.8	109.3	112.8
Valves and pipe fittings	3491,92,94	93.6	95.0	94.4	93.9	101.4	101.2	102.1	101.7	100.4	104.2	109.7	109.7
Fabricated pipe and fittings	3498	140.8	130.0	120.0	121.4	99.6	102.3	107.0	114.2	109.6	113.3	112.9	113.0
Internal combustion engines, n.e.c.	3519	83.1	90.2	92.0	98.5	106.3	113.2	108.4	103.3	101.2	104.3	119.5	124.9
Farm machinery and equipment	3523	108.6	112.7	101.6	95.7	112.8	124.0	131.8	125.3	119.1	123.7	131.4	143.4
Lawn and garden equipment	3524	70.0	79.3	82.4	93.2	97.5	93.2	94.8	95.8	108.7	114.7	116.6	126.3
Construction machinery	3531	87.9	91.6	92.2	99.1	107.6	110.2	109.6	101.0	100.6	107.0	123.2	132.9
Mining machinery	3532	102.2	90.2	93.7	95.1	102.0	107.0	98.4	90.0	90.1	109.5	99.5	109.3
Oil and gas field machinery	3533	156.9	126.0	115.2	105.9	123.1	116.1	113.9	110.9	125.7	122.1	119.9	117.5
Metal cutting machine tools	3541	101.4	87.2	89.9	92.0	94.8	99.9	99.2	94.8	113.0	111.4	110.0	111.9
Metal forming machine tools	3542	112.5	90.7	93.1	93.7	113.1	107.9	97.7	88.4	102.5	115.0	104.3	116.2
Machine tool accessories	3545	105.9	94.6	92.3	95.0	98.2	102.5	104.1	104.6	96.8	101.5	114.8	122.3
Pumps and pumping equipment	3561,94	84.0	92.0	91.9	92.7	105.7	101.3	103.4	102.5	98.6	105.2	110.6	113.4
Ball and roller bearings	3562	108.0	95.4	91.6	94.1	102.9	99.0	93.1	89.6	97.8	103.8	106.3	107.2
Air and gas compressors	3563	87.6	90.1	92.2	96.0	103.7	105.3	107.8	110.2	112.7	111.5	117.3	115.0
Refrigeration and heating equipment	3585	100.3	100.1	98.1	95.8	104.0	109.0	106.3	104.8	107.6	111.8	115.1	115.0
Carburetors, pistons, rings, and valves	3592	102.9	95.1	98.8	95.7	109.9	119.4	114.1	115.1	126.4	136.4	142.9	143.0
Transformers, except electronic	3612	100.2	95.4	97.0	99.3	102.8	104.3	107.3	110.7	126.5	121.8	143.4	159.9
Switchgear and switchboard apparatus	3613	88.2	92.2	95.1	95.9	109.1	106.5	106.5	103.9	114.6	123.1	123.8	131.7
Motors and generators	3621	89.0	93.3	94.9	96.8	102.8	103.6	100.9	104.4	111.5	127.1	124.4	139.1
Household cooking equipment	3631	61.8	92.0	90.3	104.6	116.1	96.8	99.5	104.9	100.9	103.7	127.4	125.5
Household refrigerators and freezers	3632	70.1	97.5	104.1	101.2	103.3	105.2	107.3	111.8	116.0	116.8	126.7	124.2
Household laundry equipment	3633	72.3	92.8	93.8	97.4	106.1	98.7	104.0	111.0	115.9	144.8	150.5	131.6
Household appliances, n.e.c.	3639	63.7	85.9	86.3	89.1	100.6	96.3	91.8	80.5	91.6	117.6	118.9	116.0
Electric lamp bulbs and tubes	3641	61.3	86.4	94.2	91.5	100.3	92.7	98.0	101.8	112.8	100.9	98.9	95.9
Lighting fixtures and equipment	3645,46,47,48	84.1	91.3	96.7	103.0	98.1	97.3	96.0	94.3	98.9	103.7	110.0	107.5
Household audio and video equipment	3651	22.3	84.7	96.3	106.9	106.2	120.5	124.1	135.7	151.8	163.1	179.3	225.3
Motor vehicles and equipment	371	68.7	91.1	95.3	95.1	103.2	103.3	102.4	96.7	104.3	105.4	107.3	104.4
Aircraft	3721	79.2	84.7	94.2	93.5	105.8	107.5	112.9	131.4	141.7	142.5	131.8	132.5
Instruments to measure electricity	3825	63.7	96.2	95.4	90.4	106.1	105.2	106.2	108.3	119.0	122.4	144.7	163.6
Photographic equipment and supplies	386	58.9	88.2	86.1	94.1	105.6	113.0	107.8	110.2	116.4	126.9	132.7	129.4
Railroad transportation	4011	46.5	78.0	81.5	89.2	108.4	114.6	118.5	127.8	139.6	145.6	–	–
Bus carriers, class 1	411,13,14 pts.	116.8	100.1	96.1	95.6	107.9	104.6	–	–	–	–	–	–
Trucking, except local	4213	69.5	97.3	93.8	96.8	105.2	109.4	–	–	–	–	–	–
U.S. Postal service	43	88.6	98.1	98.4	100.0	99.9	99.7	104.0	103.7	104.5	107.1	106.6	106.5
Air transportation	4512,13,22 pts.	54.3	88.8	92.0	93.8	99.5	95.8	92.9	92.5	96.9	100.2	105.8	108.4
Petroleum pipelines	4612,13	93.2	99.4	99.9	102.0	104.8	103.2	102.5	99.0	100.2	104.4	108.1	117.7
Telephone communications	481	42.7	84.5	88.9	95.0	106.2	111.6	113.3	119.8	127.7	135.2	141.6	144.6
Electric utilities	491,3 pt.	88.4	93.8	93.0	95.3	104.9	107.7	110.1	113.4	115.2	120.6	126.8	135.0
Gas utilities	492,3 pt	145.5	114.1	111.9	102.1	105.5	103.5	94.8	94.0	95.3	107.0	102.2	105.9
Scrap and waste materials	5093	–	89.1	93.4	97.7	95.4	86.0	98.6	98.9	101.7	109.4	107.7	108.9
Hardware stores	525	83.3	96.6	95.6	101.6	108.6	115.2	110.4	102.5	107.2	106.7	114.5	106.4
Department stores	531	60.8	90.4	92.6	97.4	99.2	96.9	94.2	98.2	101.2	105.0	107.1	107.6
Variety stores	533	148.9	141.9	129.2	106.7	101.9	124.5	151.3	154.3	167.7	170.4	160.5	159.3
General merchandise stores	539	–	78.6	80.9	97.5	100.8	109.8	116.4	121.8	136.1	159.9	161.6	165.9
Grocery stores	541	109.1	107.9	105.7	103.8	98.9	95.4	94.6	93.7	93.3	92.7	92.2	91.2
Retail bakeries	546	125.6	96.0	87.6	93.6	89.8	83.3	89.7	94.7	94.0	85.6	85.6	84.6
New and used car dealers	551	85.1	99.5	99.8	101.6	103.5	102.5	106.1	104.2	106.5	107.4	108.3	107.1
Auto and home supply stores	553	71.1	90.4	94.5	94.3	103.2	101.5	102.8	98.9	98.9	98.9	103.0	106.8
Gasoline service stations	554	59.5	87.0	93.5	101.8	103.0	105.1	102.6	104.3	109.7	112.4	115.0	119.2
Men's and boys' clothing stores	561	77.6	93.7	98.3	100.7	106.0	109.3	112.8	117.7	116.4	115.7	120.9	122.6
Women's clothing stores	562	58.9	98.0	99.8	107.0	97.5	99.1	100.8	101.9	110.7	116.2	118.1	122.9
Family clothing stores	565	76.2	106.2	103.1	103.3	102.4	105.5	104.9	106.9	112.3	111.6	114.9	128.4
Shoe stores	566	81.3	90.6	97.6	105.5	102.7	107.2	106.2	105.1	111.5	110.8	120.5	123.8
Furniture and homefurnishings stores	571	83.9	97.9	94.8	101.2	98.9	101.3	102.2	101.6	108.6	108.9	111.0	116.4
Household appliance stores	572	59.8	87.2	94.9	106.5	98.5	103.5	102.8	105.2	113.9	114.6	115.9	119.9
Radio, television, and computer stores	573	45.6	79.1	89.3	94.1	119.3	115.7	120.9	129.6	143.5	157.3	178.4	195.6
Eating and drinking places	58	110.3	98.9	96.2	99.3	102.8	102.2	104.0	103.1	102.4	103.1	101.4	102.2
Drug stores and proprietary stores	591	92.2	106.4	102.5	101.6	101.9	102.5	103.6	104.7	103.6	104.7	103.7	102.8
Liquor stores	592	95.0	93.6	101.9	93.8	98.2	101.1	105.2	105.9	108.4	100.5	98.7	104.4
Miscellaneous shopping goods stores	594	–	92.6	94.1	97.1	98.4	101.7	101.5	102.0	100.6	103.9	108.2	114.0
Catalog and mail-order houses	5961	–	80.6	80.8	87.2	107.3	111.4	102.1	107.2	113.8	121.0	120.0	123.9
Commercial banks	602	81.2	89.6	94.3	96.2	102.9	101.3	104.6	107.4	109.4	119.5	119.5	124.4
Hotels and motels	701	102.4	101.6	101.2	98.9	97.6	95.0	96.0	99.0	107.6	106.8	111.0	113.2
Laundry, cleaning, and garment services	721	110.8	107.5	103.3	100.8	97.2	100.5	101.0	98.7	99.9	99.9	101.9	105.1
Beauty shops	723	85.9	98.5	96.1	96.9	95.1	99.6	96.8	94.8	99.6	96.5	101.1	104.8
Automotive repair shops	753	109.4	91.7	99.4	96.2	105.7	108.1	106.9	98.7	103.3	102.9	110.4	116.4

n.e.s. = not elsewhere specified.
n.e.c. = not elsewhere classified.
– Data not available.

43. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		1996			1997				1998
	1996	1997	II	III	IV	I	II	III	IV	I
United States	5.4	4.9	5.4	5.3	5.3	5.3	4.9	4.9	4.7	4.7
Canada	9.7	9.2	9.6	9.8	9.9	9.6	9.4	9.0	8.9	8.6
Australia	8.6	8.6	8.5	8.7	8.6	8.7	8.7	8.6	8.3	8.1
Japan	3.4	3.4	3.5	3.4	3.3	3.3	3.4	3.4	3.5	3.7
France	12.6	–	12.5	12.7	12.6	12.6	12.7	12.7	12.5	12.2
Germany	7.2	–	7.1	7.2	7.5	7.7	7.7	7.8	7.8	7.7
Italy[1]	12.1	12.3	12.1	12.2	12.1	12.3	12.4	12.2	12.3	12.1
Sweden	9.9	–	9.6	10.0	10.4	10.6	10.4	9.5	8.8	8.4
United Kingdom	8.2	–	8.3	8.2	7.9	7.5	7.3	6.9	6.6	6.4

[1] Quarterly rates are for the first month of the quarter.

– Data not available.

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data, and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures. See "Notes on the data" for information on breaks in series. For further qualifications and historical data, see *Comparative Labor Force Statistics, 10 Countries* (Bureau of Labor Statistics, August 1996).

44. Annual data: Employment status of the working-age population, approximating U.S. concepts, 10 countries

[Numbers in thousands]

Employment status and country	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Civilian labor force										
United States[1]	119,865	121,669	123,869	125,840	126,346	128,105	129,200	131,056	132,304	133,943
Canada	13,631	13,900	14,151	14,329	14,408	14,482	14,663	14,832	14,928	15,145
Australia	7,758	7,974	8,228	8,444	8,490	8,562	8,619	8,776	9,001	9,127
Japan	60,050	60,860	61,920	63,050	64,280	65,040	65,470	65,780	65,990	66,450
France	23,890	23,980	24,170	24,300	24,490	24,570	24,640	24,760	24,860	25,100
Germany	28,390	28,610	28,840	29,410	29,760	30,030	29,950	29,860	29,710	29,590
Italy	22,350	22,660	22,530	22,670	22,940	22,910	22,760	22,640	22,700	22,820
Netherlands	6,500	6,310	6,430	6,640	6,750	6,950	7,090	7,190	7,270	7,320
Sweden	4,437	4,494	4,552	4,597	4,591	4,520	4,443	4,418	4,460	4,459
United Kingdom	27,870	28,270	28,580	28,730	28,610	28,410	28,310	28,280	28,480	28,620
Participation rate[2]										
United States[1]	65.6	65.9	66.5	66.5	66.2	66.4	66.3	66.6	66.6	66.8
Canada	66.7	67.2	67.5	67.3	66.7	65.9	65.5	65.3	64.8	64.9
Australia	63.0	63.3	64.0	64.6	64.1	63.9	63.6	63.9	64.6	64.6
Japan	61.9	61.9	62.2	62.6	63.2	63.4	63.3	63.1	62.9	63.0
France	56.5	56.2	56.1	56.0	56.0	55.8	55.6	55.5	55.3	55.5
Germany	55.0	55.1	55.2	55.3	55.4	55.1	54.2	53.7	53.2	52.8
Italy	47.6	47.4	47.3	47.2	47.7	47.5	48.1	47.5	47.6	47.7
Netherlands	56.3	54.2	54.7	56.1	56.5	57.8	58.5	59.0	59.3	59.4
Sweden	66.4	66.9	67.3	67.4	67.0	65.7	64.5	63.9	64.3	64.3
United Kingdom	62.9	63.5	64.0	64.1	63.7	63.1	62.8	62.5	62.7	62.7
Employed										
United States[1]	112,440	114,968	117,342	118,793	117,718	118,492	120,259	123,060	124,900	126,708
Canada	12,422	12,819	13,086	13,165	12,916	12,842	13,015	13,292	13,506	13,676
Australia	7,129	7,398	7,720	7,859	7,676	7,637	7,680	7,921	8,235	8,344
Japan	58,320	59,310	60,500	61,710	62,920	63,620	63,810	63,860	63,890	64,200
France	21,320	21,520	21,850	22,100	22,140	22,010	21,730	21,710	21,940	21,950
Germany	26,590	26,800	27,200	27,950	28,480	28,660	28,230	27,920	27,770	27,470
Italy	20,590	20,870	20,770	21,080	21,360	21,230	20,430	20,080	19,970	20,050
Netherlands	5,850	5,830	5,980	6,230	6,350	6,560	6,620	6,670	6,760	6,850
Sweden	4,340	4,410	4,480	4,513	4,447	4,265	4,028	3,992	4,056	4,019
United Kingdom	25,010	25,850	26,510	26,740	26,090	25,530	25,340	25,550	26,000	26,280
Employment-population ratio[3]										
United States[1]	61.5	62.3	63.0	62.8	61.7	61.5	61.7	62.5	62.9	63.2
Canada	60.8	62.0	62.4	61.9	59.8	58.4	58.2	58.5	58.6	58.6
Australia	57.9	58.7	60.1	60.1	57.9	57.0	56.6	57.7	59.1	59.1
Japan	60.1	60.4	60.8	61.3	61.8	62.0	61.7	61.3	60.9	60.9
France	50.4	50.4	50.7	50.9	50.6	50.0	49.0	48.7	48.8	48.5
Germany	51.5	51.6	52.0	52.6	53.0	52.6	51.1	50.2	49.7	49.0
Italy	43.8	43.7	43.6	43.9	44.5	44.0	43.1	42.1	41.8	41.9
Netherlands	50.7	50.0	50.9	52.6	53.2	54.5	54.7	54.7	55.2	55.6
Sweden	65.0	65.7	66.2	66.1	64.9	62.0	58.5	57.6	58.4	57.9
United Kingdom	56.4	58.1	59.3	59.6	58.0	56.7	56.2	56.5	57.2	57.6
Unemployed										
United States[1]	7,425	6,701	6,528	7,047	8,628	9,613	8,940	7,996	7,404	7,236
Canada	1,208	1,082	1,065	1,164	1,492	1,640	1,649	1,541	1,422	1,469
Australia	629	576	508	585	814	925	939	856	766	783
Japan	1,730	1,550	1,420	1,340	1,360	1,420	1,660	1,920	2,100	2,250
France	2,570	2,460	2,320	2,200	2,350	2,560	2,910	3,050	2,920	3,150
Germany	1,800	1,810	1,640	1,460	1,280	1,370	1,720	1,940	1,940	2,120
Italy	1,760	1,790	1,760	1,590	1,580	1,680	2,330	2,560	2,720	2,760
Netherlands	650	480	450	410	400	390	470	520	510	470
Sweden	97	84	72	84	144	255	415	426	404	440
United Kingdom	2,860	2,420	2,070	1,990	2,520	2,880	2,970	2,730	2,480	2,340
Unemployment rate										
United States[1]	6.2	5.5	5.3	5.6	6.8	7.5	6.9	6.1	5.6	5.4
Canada	8.9	7.8	7.5	8.1	10.4	11.3	11.2	10.4	9.5	9.7
Australia	8.1	7.2	6.2	6.9	9.6	10.8	10.9	9.7	8.5	8.6
Japan	2.9	2.5	2.3	2.1	2.1	2.2	2.5	2.9	3.2	3.4
France	10.8	10.3	9.6	9.1	9.6	10.4	11.8	12.3	11.8	12.6
Germany	6.3	6.3	5.7	5.0	4.3	4.6	5.7	6.5	6.5	7.2
Italy	7.9	7.9	7.8	7.0	6.9	7.3	10.2	11.3	12.0	12.1
Netherlands	10.0	7.6	7.0	6.2	5.9	5.6	6.6	7.2	7.0	6.4
Sweden	2.2	1.9	1.6	1.8	3.1	5.6	9.3	9.6	9.1	9.9
United Kingdom	10.3	8.6	7.2	6.9	8.8	10.1	10.5	9.7	8.7	8.2

[1] Data for 1994 are not directly comparable with data for 1993 and earlier years. For additional information, see the box note under "Employment and Unemployment Data" in the notes to this section.

[2] Labor force as a percent of the working-age population.

[3] Employment as a percent of the working-age population.

NOTE: See "Notes on the data" for information on breaks in series for the United States, France, Italy, the Netherlands, and Sweden.

45. Annual indexes of manufacturing productivity and related measures, 12 countries

[1992 = 100]

Item and country	1960	1970	1973	1980	1986	1987	1988	1989	1990	1991	1993	1994	1995	1996
Output per hour														
United States	–	–	–	71.9	88.2	94.3	97.8	97.0	97.7	98.2	102.1	108.1	115.1	120.2
Canada	40.5	60.4	72.2	78.5	92.6	93.5	93.9	94.3	95.8	96.3	101.7	106.2	107.5	108.6
Japan	14.0	38.0	48.1	63.9	76.9	81.2	84.8	89.5	95.4	99.4	100.5	101.8	109.2	114.3
Belgium	17.8	32.7	42.6	64.5	87.6	88.7	91.8	96.7	96.9	99.1	104.1	110.0	109.4	110.6
Denmark	29.5	52.1	66.1	89.2	90.0	89.6	92.9	96.1	96.0	97.9	106.8	–	–	–
France	23.0	45.5	53.9	70.5	85.2	86.7	92.7	97.4	99.1	98.7	101.8	110.4	114.5	117.0
Germany	29.2	52.1	61.1	77.3	89.5	88.4	91.6	94.4	99.0	102.0	100.8	108.4	112.0	117.0
Italy	19.6	36.8	43.9	64.0	82.6	85.0	86.6	89.4	92.8	95.3	104.5	107.4	110.7	113.3
Netherlands	19.5	38.6	48.8	69.8	91.0	91.7	93.8	97.1	98.5	99.6	101.9	114.2	119.6	122.6
Norway	36.7	57.8	67.6	76.7	89.0	93.3	92.1	94.6	96.6	97.5	100.6	101.4	102.5	103.3
Sweden	27.6	52.8	62.1	74.0	88.5	90.1	90.8	93.8	95.0	95.0	106.7	116.1	122.4	125.4
United Kingdom	30.2	43.3	51.4	54.4	74.0	78.2	82.7	86.2	89.3	93.9	105.7	109.3	107.6	106.1
Output														
United States	–	–	–	77.3	91.0	97.9	104.5	104.0	102.5	98.7	103.5	112.2	119.8	124.5
Canada	34.2	61.0	77.6	85.9	99.3	104.1	109.4	110.3	106.2	98.7	104.8	112.8	117.1	118.6
Japan	10.7	38.8	50.0	59.9	74.9	78.4	84.6	90.2	96.3	101.4	96.0	95.4	100.5	105.2
Belgium	30.7	57.6	70.6	78.2	89.0	88.7	93.1	98.9	101.0	100.7	96.9	101.4	104.5	104.7
Denmark	40.1	66.8	78.1	89.7	101.7	97.6	99.1	100.3	99.3	99.2	101.1	103.0	106.7	106.9
France	32.4	66.9	80.1	92.7	91.2	91.1	96.3	101.6	103.5	101.7	96.2	101.3	105.4	106.2
Germany	41.5	70.9	78.5	85.3	89.7	88.0	90.9	94.0	99.1	102.8	91.8	93.5	94.2	93.9
Italy	21.5	44.8	54.1	78.7	84.8	88.5	94.8	98.6	100.4	99.7	96.6	101.9	107.7	106.8
Netherlands	31.9	59.8	68.0	77.8	88.3	89.5	92.8	96.9	100.1	100.6	98.2	104.2	107.5	109.1
Norway	56.5	89.1	102.2	103.6	108.1	110.7	105.3	101.3	100.2	98.3	102.7	106.7	109.9	112.9
Sweden	46.5	81.7	88.5	91.8	105.2	107.7	110.2	111.6	110.6	103.6	101.3	115.7	130.1	132.9
United Kingdom	67.8	90.4	99.7	87.2	90.2	94.5	101.5	105.5	105.4	100.1	101.5	106.2	108.0	108.3
Total hours														
United States	92.2	104.5	110.5	107.6	103.1	103.9	106.8	107.2	104.9	100.6	101.4	103.8	104.1	103.5
Canada	84.5	100.9	107.5	109.5	107.2	111.4	116.5	117.0	110.8	102.5	103.0	106.2	108.9	109.1
Japan	76.3	102.3	104.0	93.8	97.3	96.6	99.8	100.8	100.9	102.0	95.6	93.7	92.0	92.0
Belgium	172.1	176.3	165.6	121.4	101.6	100.0	101.5	102.3	104.3	101.6	93.2	92.2	95.6	94.6
Denmark	135.8	128.3	118.1	100.6	113.1	109.0	106.6	104.3	103.3	101.3	94.7	–	–	–
France	140.6	147.0	148.7	131.5	107.2	105.1	104.0	104.4	104.5	103.0	94.5	91.8	92.0	90.8
Germany	142.4	136.1	128.4	110.3	100.1	99.6	99.2	99.5	100.1	100.8	91.1	86.3	84.1	80.3
Italy	109.6	121.8	123.4	123.0	102.7	104.1	109.5	110.2	108.2	104.6	92.4	94.8	97.2	94.3
Netherlands	163.3	155.1	139.3	111.4	97.0	97.6	98.9	99.7	101.6	101.0	96.4	91.3	89.8	89.0
Norway	154.0	154.3	151.2	135.0	121.6	118.6	114.3	107.1	103.7	100.8	102.1	105.2	107.2	109.3
Sweden	168.3	154.7	142.5	124.0	118.9	119.5	121.4	119.0	116.4	109.0	94.9	99.6	106.3	106.0
United Kingdom	224.4	208.6	194.0	160.3	121.9	120.9	122.7	122.3	118.0	106.6	96.0	97.2	100.3	102.1
Compensation per hour														
United States	14.9	23.8	28.6	55.8	78.6	80.8	84.0	86.8	91.0	95.7	102.9	105.6	108.7	112.2
Canada	10.5	18.3	22.9	50.2	77.5	79.8	83.3	86.4	91.3	97.1	100.1	102.1	103.9	108.5
Japan	4.3	16.5	26.8	58.6	76.1	77.9	79.2	84.2	90.7	95.9	104.6	106.7	110.0	111.6
Belgium	5.6	14.1	21.7	52.7	77.5	79.3	81.0	85.2	89.9	95.4	105.0	108.4	111.6	114.3
Denmark	4.6	13.2	20.4	49.4	72.9	79.7	82.5	87.2	92.6	96.2	102.4	–	–	–
France	4.3	10.5	14.9	41.3	76.8	79.7	82.7	87.2	91.8	96.3	103.6	106.2	107.7	109.6
Germany	8.1	20.8	29.1	53.8	73.1	76.6	79.6	83.4	89.4	95.1	106.1	112.1	117.4	123.5
Italy	1.6	4.6	7.0	27.9	62.6	66.1	68.7	75.5	84.0	93.1	107.1	106.6	109.2	117.1
Netherlands	6.4	20.3	31.8	64.7	85.1	87.8	87.7	88.5	90.8	95.2	103.7	108.2	111.1	114.5
Norway	4.7	11.8	17.0	39.0	69.1	78.5	83.3	87.2	92.3	97.5	101.5	104.4	109.2	114.0
Sweden	4.1	10.8	15.2	37.4	63.1	67.3	71.7	79.4	87.6	95.4	98.0	101.1	106.2	113.4
United Kingdom	3.1	6.4	9.6	33.8	59.4	66.3	70.3	75.2	83.5	93.0	106.3	108.3	108.7	110.8
Unit labor costs: National currency basis														
United States	–	–	–	77.6	89.1	85.7	85.9	89.5	93.1	97.5	100.8	97.7	94.5	93.3
Canada	25.9	30.3	31.8	63.9	83.6	85.3	88.7	91.7	95.2	100.9	98.4	96.1	96.7	99.9
Japan	30.9	43.3	55.7	91.7	99.0	96.0	93.4	94.0	95.0	96.5	104.1	104.9	100.7	97.7
Belgium	31.2	43.3	50.8	81.8	88.6	89.5	88.3	88.1	92.7	96.3	100.9	98.6	102.0	103.3
Denmark	15.5	25.3	30.8	55.3	81.0	89.0	88.8	90.7	96.5	98.3	95.9	97.9	101.4	103.5
France	18.7	23.0	27.6	58.6	90.2	92.0	89.3	89.5	92.6	97.6	101.8	96.2	94.0	93.7
Germany	28.0	39.9	47.6	69.6	81.6	86.7	86.9	88.3	90.3	93.2	105.3	103.5	104.8	105.5
Italy	8.0	12.6	16.0	43.7	75.8	77.8	79.4	84.4	90.5	97.7	102.5	99.2	98.6	103.3
Netherlands	33.0	52.7	65.1	92.7	93.5	95.8	93.5	91.1	92.1	95.6	101.8	94.8	92.9	93.4
Norway	12.9	20.4	25.1	50.8	77.7	84.1	90.4	92.2	95.6	100.0	100.9	102.9	106.5	110.3
Sweden	14.9	20.5	24.4	50.6	71.3	74.7	79.0	84.7	92.3	100.4	91.8	87.0	86.8	90.4
United Kingdom	10.3	14.8	18.8	62.1	80.3	84.5	85.0	87.2	93.5	99.0	100.5	99.1	101.0	104.4
Unit labor costs: U.S. dollar basis														
United States	–	–	–	77.6	89.1	85.7	85.9	89.5	93.1	97.5	100.8	97.7	94.5	93.3
Canada	32.3	35.1	38.4	66.1	72.7	77.8	87.1	93.6	98.6	106.4	92.1	85.0	85.2	88.5
Japan	10.9	15.3	26.1	51.5	74.5	84.2	92.4	86.3	83.1	90.9	118.8	130.1	135.9	113.8
Belgium	20.1	28.0	42.1	90.0	63.7	77.0	77.1	71.9	89.2	90.6	93.8	94.8	111.3	107.2
Denmark	13.5	20.4	30.9	59.4	60.4	78.4	79.5	74.8	94.1	92.7	89.2	93.0	109.4	107.7
France	20.2	22.0	32.9	73.5	69.0	81.0	79.3	74.3	90.0	91.5	95.1	91.8	99.8	96.9
Germany	10.5	17.1	28.1	59.9	58.7	75.3	77.2	73.3	87.2	87.7	99.4	99.6	114.3	109.5
Italy	15.9	24.7	34.0	62.9	62.6	73.9	75.1	75.8	93.0	97.0	80.3	75.8	74.6	82.5
Netherlands	15.4	25.6	41.2	82.1	67.1	83.1	83.1	75.5	88.9	89.8	96.3	91.6	101.8	97.4
Norway	11.3	17.8	27.2	63.9	65.3	77.5	86.1	82.9	95.0	95.7	88.3	90.7	104.5	106.1
Sweden	16.8	23.0	32.7	69.6	58.3	68.5	75.0	76.4	90.8	96.6	68.6	65.7	70.8	78.5
United Kingdom	16.4	20.1	26.0	81.7	66.7	78.4	85.8	80.8	94.5	99.1	85.5	86.0	90.2	92.3

– Data not available.

46. Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]											
	1985	1986	1987	1988	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]
PRIVATE SECTOR[5]												
Total cases	7.9	7.9	8.3	8.6	8.6	8.8	8.4	8.9	8.5	8.4	8.1	7.4
Lost workday cases	3.6	3.6	3.8	4.0	4.0	4.1	3.9	3.9	3.8	3.8	3.6	3.4
Lost workdays	64.9	65.8	69.9	76.1	78.7	84.0	86.5	93.8	–	–	–	–
Agriculture, forestry, and fishing[5]												
Total cases	11.4	11.2	11.2	10.9	10.9	11.6	10.8	11.6	11.2	10.0	9.7	8.7
Lost workday cases	5.7	5.6	5.7	5.6	5.7	5.9	5.4	5.4	5.0	4.7	4.3	3.9
Lost workdays	91.3	93.6	94.1	101.8	100.9	112.2	108.3	126.9	–	–	–	–
Mining												
Total cases	8.4	7.4	8.5	8.8	8.5	8.3	7.4	7.3	6.8	6.3	6.2	5.4
Lost workday cases	4.8	4.1	4.9	5.1	4.8	5.0	4.5	4.1	3.9	3.9	3.9	3.2
Lost workdays	145.3	125.9	144.0	152.1	137.2	119.5	129.6	204.7	–	–	–	–
Construction												
Total cases	15.2	15.2	14.7	14.6	14.3	14.2	13.0	13.1	12.2	11.8	10.6	9.9
Lost workday cases	6.8	6.9	6.8	6.8	6.8	6.7	6.1	5.8	5.5	5.5	4.9	4.5
Lost workdays	128.9	134.5	135.8	142.2	143.3	147.9	148.1	161.9	–	–	–	–
General building contractors:												
Total cases	15.2	14.9	14.2	14.0	13.9	13.4	12.0	12.2	11.5	10.9	9.8	9.0
Lost workday cases	6.8	6.6	6.5	6.4	6.5	6.4	5.5	5.4	5.1	5.1	4.4	4.0
Lost workdays	120.4	122.7	134.0	132.2	137.3	137.6	132.0	142.7	–	–	–	–
Heavy construction, except building:												
Total cases	14.5	14.7	14.5	15.1	13.8	13.8	12.8	12.1	11.1	10.2	9.9	9.0
Lost workday cases	6.3	6.3	6.4	7.0	6.5	6.3	6.0	5.4	5.1	5.0	4.8	4.3
Lost workdays	127.3	132.9	139.1	162.3	147.1	144.6	160.1	165.8	–	–	–	–
Special trades contractors:												
Total cases	15.4	15.6	15.0	14.7	14.6	14.7	13.5	13.8	12.8	12.5	11.1	10.4
Lost workday cases	7.0	7.2	7.1	7.0	6.9	6.9	6.3	6.1	5.8	5.8	5.0	4.8
Lost workdays	133.3	140.4	135.7	141.1	144.9	153.1	151.3	168.3	–	–	–	–
Manufacturing												
Total cases	10.4	10.6	11.9	13.1	13.1	13.2	12.7	12.5	12.1	12.2	11.6	10.6
Lost workday cases	4.6	4.7	5.3	5.7	5.8	5.8	5.6	5.4	5.3	5.5	5.3	4.9
Lost workdays	80.2	85.2	95.5	107.4	113.0	120.7	121.5	124.6	–	–	–	–
Durable goods:												
Total cases	10.9	11.0	12.5	14.2	14.1	14.2	13.6	13.4	13.1	13.5	12.8	11.6
Lost workday cases	4.7	4.8	5.4	5.9	6.0	6.0	5.7	5.5	5.4	5.7	5.6	5.1
Lost workdays	82.0	87.1	96.8	111.1	116.5	123.3	122.9	126.7	–	–	–	–
Lumber and wood products:												
Total cases	18.5	18.9	18.9	19.5	18.4	18.1	16.8	16.3	15.9	15.7	14.9	14.2
Lost workday cases	9.3	9.7	9.6	10.0	9.4	8.8	8.3	7.6	7.6	7.7	7.0	6.8
Lost workdays	171.4	177.2	176.5	189.1	177.5	172.5	172.0	165.8	–	–	–	–
Furniture and fixtures:												
Total cases	15.0	15.2	15.4	16.6	16.1	16.9	15.9	14.8	14.6	15.0	13.9	12.2
Lost workday cases	6.3	6.3	6.7	7.3	7.2	7.8	7.2	6.6	6.5	7.0	6.4	5.4
Lost workdays	100.4	103.0	103.6	115.7	–	–	–	128.4	–	–	–	–
Stone, clay, and glass products:												
Total cases	13.9	13.6	14.9	16.0	15.5	15.4	14.8	13.6	13.8	13.2	12.3	12.4
Lost workday cases	6.7	6.5	7.1	7.5	7.4	7.3	6.8	6.1	6.3	6.5	5.7	6.0
Lost workdays	127.8	126.0	135.8	141.0	149.8	160.5	156.0	152.2	–	–	–	–
Primary metal industries:												
Total cases	12.6	13.6	17.0	19.4	18.7	19.0	17.7	17.5	17.0	16.8	16.5	15.0
Lost workday cases	5.7	6.1	7.4	8.2	8.1	8.1	7.4	7.1	7.3	7.2	7.2	6.8
Lost workdays	113.8	125.5	145.8	161.3	168.3	180.2	169.1	175.5	–	–	–	–
Fabricated metal products:												
Total cases	16.3	16.0	17.0	18.8	18.5	18.7	17.4	16.8	16.2	16.4	15.8	14.4
Lost workday cases	6.9	6.8	7.2	8.0	7.9	7.9	7.1	6.6	6.7	6.7	6.9	6.2
Lost workdays	110.1	115.5	121.9	138.8	147.6	155.7	146.6	144.0	–	–	–	–
Industrial machinery and equipment:												
Total cases	10.8	10.7	11.3	12.1	12.1	12.0	11.2	11.1	11.1	11.6	11.2	9.9
Lost workday cases	4.2	4.2	4.4	4.7	4.8	4.7	4.4	4.2	4.2	4.4	4.4	4.0
Lost workdays	69.3	72.0	72.7	82.8	86.8	88.9	86.6	87.7	–	–	–	–
Electronic and other electrical equipment:												
Total cases	6.4	6.4	7.2	8.0	9.1	9.1	8.6	8.4	8.3	8.3	7.6	6.8
Lost workday cases	2.7	2.7	3.1	3.3	3.9	3.8	3.7	3.6	3.5	3.6	3.3	3.1
Lost workdays	45.7	49.8	55.9	64.6	77.5	79.4	83.0	81.2	–	–	–	–
Transportation equipment:												
Total cases	9.0	9.6	13.5	17.7	17.7	17.8	18.3	18.7	18.5	19.6	18.6	16.3
Lost workday cases	3.9	4.1	5.7	6.6	6.8	6.9	7.0	7.1	7.1	7.8	7.9	7.0
Lost workdays	71.6	79.1	105.7	134.2	138.6	153.7	166.1	186.6	–	–	–	–
Instruments and related products:												
Total cases	5.2	5.3	5.8	6.1	5.6	5.9	6.0	5.9	5.6	5.9	5.3	5.1
Lost workday cases	2.2	2.3	2.4	2.6	2.5	2.7	2.7	2.7	2.5	2.7	2.4	2.3
Lost workdays	37.9	42.2	43.9	51.5	55.4	57.8	64.4	65.3	–	–	–	–
Miscellaneous manufacturing industries:												
Total cases	9.7	10.2	10.7	11.3	11.1	11.3	11.3	10.7	10.0	9.9	9.1	9.5
Lost workday cases	4.2	4.3	4.6	5.1	5.1	5.1	5.1	5.0	4.6	4.5	4.3	4.4
Lost workdays	73.2	70.9	81.5	91.0	97.6	113.1	104.0	108.2	–	–	–	–

See footnotes at end of table.

46. Continued—Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]											
	1985	1986	1987	1988	1989 [1]	1990	1991	1992	1993 [4]	1994 [4]	1995 [4]	1996 [4]
Nondurable goods:												
Total cases	9.6	10.0	11.1	11.4	11.6	11.7	11.5	11.3	10.7	10.5	9.9	9.2
Lost workday cases	4.4	4.6	5.1	5.4	5.5	5.6	5.5	5.3	5.0	5.1	4.9	4.6
Lost workdays	77.6	82.3	93.5	101.7	107.8	116.9	119.7	121.8	–	–	–	–
Food and kindred products:												
Total cases	16.7	16.5	17.7	18.5	18.5	20.0	19.5	18.8	17.6	17.1	16.3	15.0
Lost workday cases	8.1	8.0	8.6	9.2	9.3	9.9	9.9	9.5	8.9	9.2	8.7	8.0
Lost workdays	138.0	137.8	153.7	169.7	174.7	202.6	207.2	211.9	–	–	–	–
Tobacco products:												
Total cases	7.3	6.7	8.6	9.3	8.7	7.7	6.4	6.0	5.8	5.3	5.6	6.7
Lost workday cases	3.0	2.5	2.5	2.9	3.4	3.2	2.8	2.4	2.3	2.4	2.6	2.8
Lost workdays	51.7	45.6	46.4	53.0	64.2	62.3	52.0	42.9	–	–	–	–
Textile mill products:												
Total cases	7.5	7.8	9.0	9.6	10.3	9.6	10.1	9.9	9.7	8.7	8.2	7.8
Lost workday cases	3.0	3.1	3.6	4.0	4.2	4.0	4.4	4.2	4.1	4.0	4.1	3.6
Lost workdays	57.4	59.3	65.9	78.8	81.4	85.1	88.3	87.1	–	–	–	–
Apparel and other textile products:												
Total cases	6.7	6.7	7.4	8.1	8.6	8.8	9.2	9.5	9.0	8.9	8.2	7.4
Lost workday cases	2.6	2.7	3.1	3.5	3.8	3.9	4.2	4.0	3.8	3.9	3.6	3.3
Lost workdays	44.1	49.4	59.5	68.2	80.5	92.1	99.9	104.6	–	–	–	–
Paper and allied products:												
Total cases	10.2	10.5	12.8	13.1	12.7	12.1	11.2	11.0	9.9	9.6	8.5	7.9
Lost workday cases	4.7	4.7	5.8	5.9	5.8	5.5	5.0	5.0	4.6	4.5	4.2	3.8
Lost workdays	94.6	99.5	122.3	124.3	132.9	124.8	122.7	125.9	–	–	–	–
Printing and publishing:												
Total cases	6.3	6.5	6.7	6.6	6.9	6.9	6.7	7.3	6.9	6.7	6.4	6.0
Lost workday cases	2.9	2.9	3.1	3.2	3.3	3.3	3.2	3.2	3.1	3.0	3.0	2.8
Lost workdays	49.2	50.8	55.1	59.8	63.8	69.8	74.5	74.8	–	–	–	–
Chemicals and allied products:												
Total cases	5.1	6.3	7.0	7.0	7.0	6.5	6.4	6.0	5.9	5.7	5.5	4.8
Lost workday cases	2.3	2.7	3.1	3.3	3.2	3.1	3.1	2.8	2.7	2.8	2.7	2.4
Lost workdays	38.8	49.4	58.8	59.0	63.4	61.6	62.4	64.2	–	–	–	–
Petroleum and coal products:												
Total cases	5.1	7.1	7.3	7.0	6.6	6.6	6.2	5.9	5.2	4.7	4.8	4.6
Lost workday cases	2.4	3.2	3.1	3.2	3.3	3.1	2.9	2.8	2.5	2.3	2.4	2.5
Lost workdays	49.9	67.5	65.9	68.4	68.1	77.3	68.2	71.2	–	–	–	–
Rubber and miscellaneous plastics products:												
Total cases	13.4	14.0	15.9	16.3	16.2	16.2	15.1	14.5	13.9	14.0	12.9	12.3
Lost workday cases	6.3	6.6	7.6	8.1	8.0	7.8	7.2	6.8	6.5	6.7	6.5	6.3
Lost workdays	107.4	118.2	130.8	142.9	147.2	151.3	150.9	153.3	–	–	–	–
Leather and leather products:												
Total cases	10.3	10.5	12.4	11.4	13.6	12.1	12.5	12.1	12.1	12.0	11.4	10.7
Lost workday cases	4.6	4.8	5.8	5.6	6.5	5.9	5.9	5.4	5.5	5.3	4.8	4.5
Lost workdays	88.3	83.4	114.5	128.2	130.4	152.3	140.8	128.5	–	–	–	–
Transportation and public utilities												
Total cases	8.6	8.2	8.4	8.9	9.2	9.6	9.3	9.1	9.5	9.3	9.1	8.7
Lost workday cases	5.0	4.8	4.9	5.1	5.3	5.5	5.4	5.1	5.4	5.5	5.2	5.1
Lost workdays	107.1	102.1	108.1	118.6	121.5	134.1	140.0	144.0	–	–	–	–
Wholesale and retail trade												
Total cases	7.4	7.7	7.7	7.8	8.0	7.9	7.6	8.4	8.1	7.9	7.5	6.8
Lost workday cases	3.2	3.3	3.4	3.5	3.6	3.5	3.4	3.5	3.4	3.4	3.2	2.9
Lost workdays	50.7	54.0	56.1	60.9	63.5	65.6	72.0	80.1	–	–	–	–
Wholesale trade:												
Total cases	7.2	7.2	7.4	7.6	7.7	7.4	7.2	7.6	7.8	7.7	7.5	6.6
Lost workday cases	3.5	3.6	3.7	3.8	4.0	3.7	3.7	3.6	3.7	3.8	3.6	3.4
Lost workdays	59.8	62.5	64.0	69.2	71.9	71.5	79.2	82.4	–	–	–	–
Retail trade:												
Total cases	7.5	7.8	7.8	7.9	8.1	8.1	7.7	8.7	8.2	7.9	7.5	6.9
Lost workday cases	3.1	3.2	3.3	3.4	3.4	3.4	3.3	3.4	3.3	3.3	3.0	2.8
Lost workdays	47.0	50.5	52.9	57.6	60.0	63.2	69.1	79.2	–	–	–	–
Finance, insurance, and real estate												
Total cases	2.0	2.0	2.0	2.0	2.0	2.4	2.4	2.9	2.9	2.7	2.6	2.4
Lost workday cases	.9	.9	.9	.9	.9	1.1	1.1	1.2	1.2	1.1	1.0	.9
Lost workdays	15.4	17.1	14.3	17.2	17.6	27.3	24.1	32.9	–	–	–	–
Services												
Total cases	5.4	5.3	5.5	5.4	5.5	6.0	6.2	7.1	6.7	6.5	6.4	6.0
Lost workday cases	2.6	2.5	2.7	2.6	2.7	2.8	2.8	3.0	2.8	2.8	2.8	2.6
Lost workdays	45.4	43.0	45.8	47.7	51.2	56.4	60.0	68.6	–	–	–	–

[1] Data for 1989 and subsequent years are based on the *Standard Industrial Classification Manual*, 1987 Edition. For this reason, they are not strictly comparable with data for the years 1985–88, which were based on the *Standard Industrial Classification Manual*, 1972 Edition, 1977 Supplement.

[2] Beginning with the 1992 survey, the annual survey measures only nonfatal injuries and illnesses, while past surveys covered both fatal and nonfatal incidents. To better address fatalities, a basic element of workplace safety, BLS implemented the Census of Fatal Occupational Injuries.

[3] The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as (N/EH) X 200,000, where:

N = number of injuries and illnesses or lost workdays;
EH = total hours worked by all employees during the calendar year; and
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

[4] Beginning with the 1993 survey, lost workday estimates will not be generated. As of 1992, BLS began generating percent distributions and the median number of days away from work by industry and for groups of workers sustaining similar work disabilities.

[5] Excludes farms with fewer than 11 employees since 1976.

– Data not available.

47. Fatal occupational injuries by event or exposure, 1992–96

Event or exposure[1]	Fatalities					
	1992	1993	1994	1995	1996	
	Number	Number	Number	Number	Number	Percent
Total	6,217	6,331	6,632	6,275	6,112	100
Transportation incidents	2,484	2,499	2,762	2,588	2,556	42
Highway incident	1,158	1,242	1,343	1,345	1,324	22
Collision between vehicles, mobile equipment	578	659	654	642	656	11
Moving in same direction	78	100	120	127	95	2
Moving in opposite directions, oncoming	201	245	230	246	214	4
Moving in intersection	107	123	144	99	153	3
Vehicle struck stationary object or equipment	192	189	255	275	240	4
Noncollision incident	301	336	373	351	348	6
Jackknifed or overturned—no collision	213	236	274	261	264	4
Nonhighway (farm, industrial premises) incident	436	392	409	389	369	6
Overturned	208	214	226	210	204	3
Worker struck by vehicle	346	365	391	388	349	6
Railway incident	66	86	81	82	75	1
Water vehicle incident	109	119	94	87	107	2
Aircraft incident	353	282	426	283	320	5
Assaults and violent acts	1,281	1,329	1,321	1,280	1,144	19
Homicides	1,044	1,074	1,080	1,036	912	15
Hitting, kicking, beating	52	35	47	46	47	1
Shooting	852	884	934	762	751	12
Stabbing	90	95	60	67	79	1
Self-inflicted injuries	205	222	214	221	199	3
Contact with objects and equipment	1,004	1,045	1,017	916	1,005	16
Struck by object	557	565	590	547	579	9
Struck by falling object	361	346	372	341	402	7
Struck by flying object	77	81	68	63	58	1
Caught in or compressed by equipment or objects	316	311	280	255	283	5
Caught in running equipment or machinery	159	151	147	131	146	2
Caught in or crushed in collapsing materials	110	138	132	99	130	2
Falls	600	618	665	650	684	11
Fall to lower level	507	534	580	577	607	10
Fall from ladder	78	76	86	97	95	2
Fall from roof	108	120	129	143	148	2
Fall from scaffold, staging	66	71	89	82	88	1
Fall on same level	62	49	63	53	49	1
Exposure to harmful substances or environments	605	592	641	609	523	9
Contact with electric current	334	325	348	348	279	5
Contact with overhead power lines	140	115	132	139	116	2
Contact with temperature extremes	33	38	50	56	32	1
Exposure to caustic, noxious, or allergenic substances	127	116	133	107	119	2
Inhalation of substances	83	68	84	62	75	1
Oxygen deficiency	111	112	109	97	92	2
Drowning, submersion	78	90	89	77	67	1
Fires and explosions	167	204	202	207	184	3
Other events or exposures[2]	76	44	24	25	16	–

[1] Based on the 1992 BLS Occupational Injury and Illness Classification Structures.

[2] Includes the category "Bodily reaction and exertion."

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding. Dashes indicate less that 0.5 percent or data that are not available or that do not meet publication criteria.

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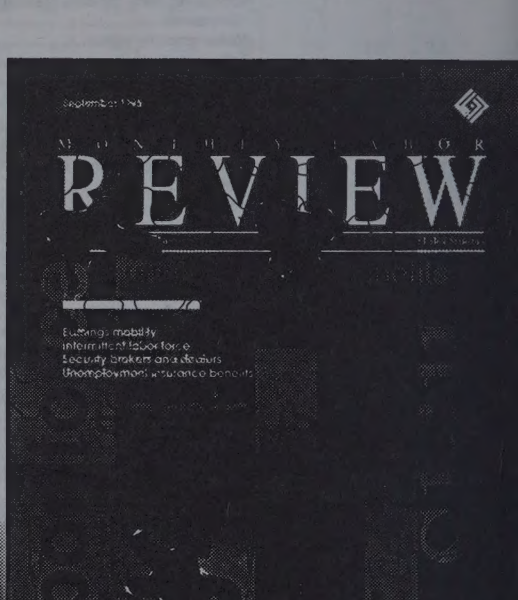

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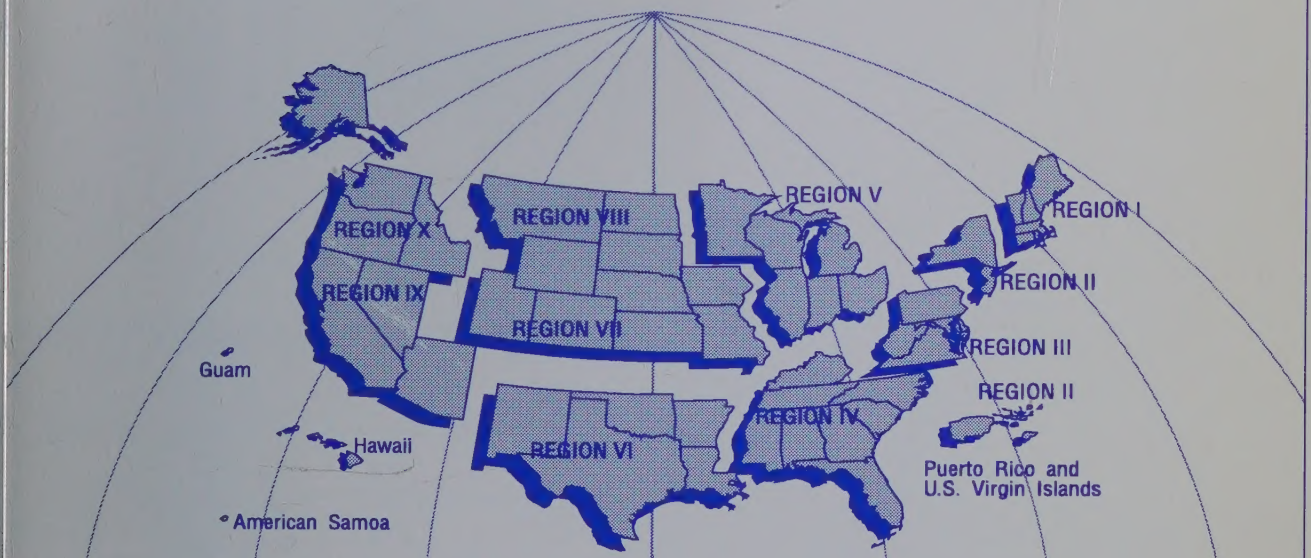

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Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation	July 2	June	August 7	July	September 4	August	1; 4–20
Productivity and costs			August 11	2nd quarter	September 3	2nd quarter	2; 39–42
U.S. Import and Export Price Indexes	July 15	June	August 13	July	September 15	August	34–38
Producer Price Indexes	July 10	June	August 14	July	September 11	August	2; 31–33
Consumer Price indexes	July 14	June	August 18	July	September 17	August	2; 28–30
Real earnings	July 14	June	August 18	July	September 17	August	13–16
Employment Cost Indexes	July 30	2nd quarter					1–3; 21–24